Approved according to 1776-2/FEA 209 544

Trouble-shooting instruction

SH 888/S 868

Standard electrical repairs

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1 Conditions

1.1 Component classifications.

All the components in the phone are divided into classes and after every component in the troubleshooting guide you have a class written. The classification of the component depends on how much of the phone's performance that's affected when replacing it. The classes are:

Class A and B: A test call towards the "real" net (not only a GSM test instrument) is enough to verify the functionality since the performance of the phone is only slightly affected.

Class C: Since the tolerances of the component are so great it can substantially affect the performance of the phone you need to calibrate it at station level.

Class D: Class D components need to be calibrated at station level using advanced equipment and can therefore not be replaced.

1.2 Updates.

At board made in weeks 20-22 of 1998 you'll have to replace L540 (class A, fig.1.1).

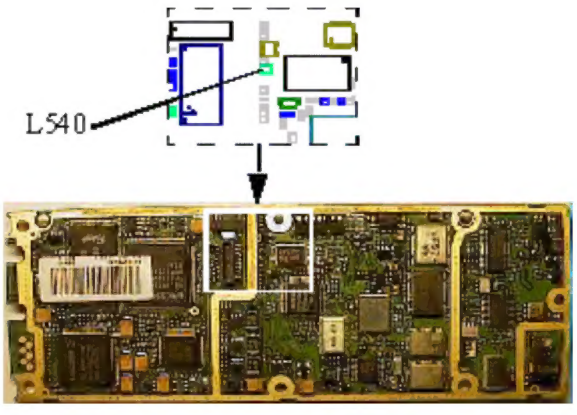

Fig. 1.1

1.3 Abbreviations.

B: Crystal.

C: Capacitor.

D: Digital circuit.

F: Over voltage protection.

H: Buzzer, LED, pads for display.

J: Connector.

L: Coil.

N: Analogue circuit.

R: Resistor.

U: BALUN. A circuit that converts a signal from balanced to unbalanced or the opposite.

V: Transistor or diode.

X: Antenna connection, contact surface at the circuit board.

Z: Filter

AGND: Ground for analogue signals.

DCIO: DC voltage used for charging the battery through the system connector.

DCON: Logical signal from the processor that keeps the phone running after you´ve released the On/Off key.

GND: Ground.

LED3K: Logical signal used to activate the background illumination.

ONSRQ: Voltage from the On/Off key that starts the phone.

REGON: Logical signal that activates the voltage regulators.

RTC: Real time clock. The clock that keeps track of time and date.

SIMCONCLK:Clock signal from the processor used for communication with the SIM.

SIMCONDAT:Data signal from the processor used for communication with the SIM.

SIMCONRST:Reset signal from the processor used for communication with the SIM.

SIMVCC: Feed voltage for the SIM.

SWDC: Switched VBATT.

VANA: DC voltage for the analogue part of the logic (N800).

VBATT:	Battery voltage.
VDIG:	DC voltage for the processor and memory (3.2V).
VDSP:	DC voltage for the DSP (Digital Signal Processor) (3.2V).
VDSPC:	DC voltatge for the DSP (Digital Signal Processor) (2.5V).
VLCD:	DC voltage for the display the controls the contrast (-2.7V).
VDLCD:	The feed voltage for the display.
VRAD:	DC voltage for the radio part except the synthesizer.
VRPAD:	DC voltage for the radio part in D600 (also used for the top diode and the buzzer).
VRTC:	DC voltage for the real time clock.
VVCO:	Dc voltage for the syntesizer.

I^2C:	Two line serial commnications standard using one clock and one data line.
LO:	Local oscillator.
PWM:	Puls width modulation.

2 No serv or can't place calls.

2.1 Find out if the fault is Rx- (receiver) or Tx-related (transmitter).

Connect the phone (with signaling program) to a GSM test instrument and try to get serv at -68.5dBm signal strength.

- If the phone gets serv, proceed to section 2.2.
- If the phone doesn't get serv, the fault probably lies in the LO part or the losses in the signal path are too great.

Open the phone and check for liquid damages.

Make sure the antenna connector (X101, class A, fig. 2.1) isn't damaged, badly soldered or dirty (glue, varnish, oxide...).

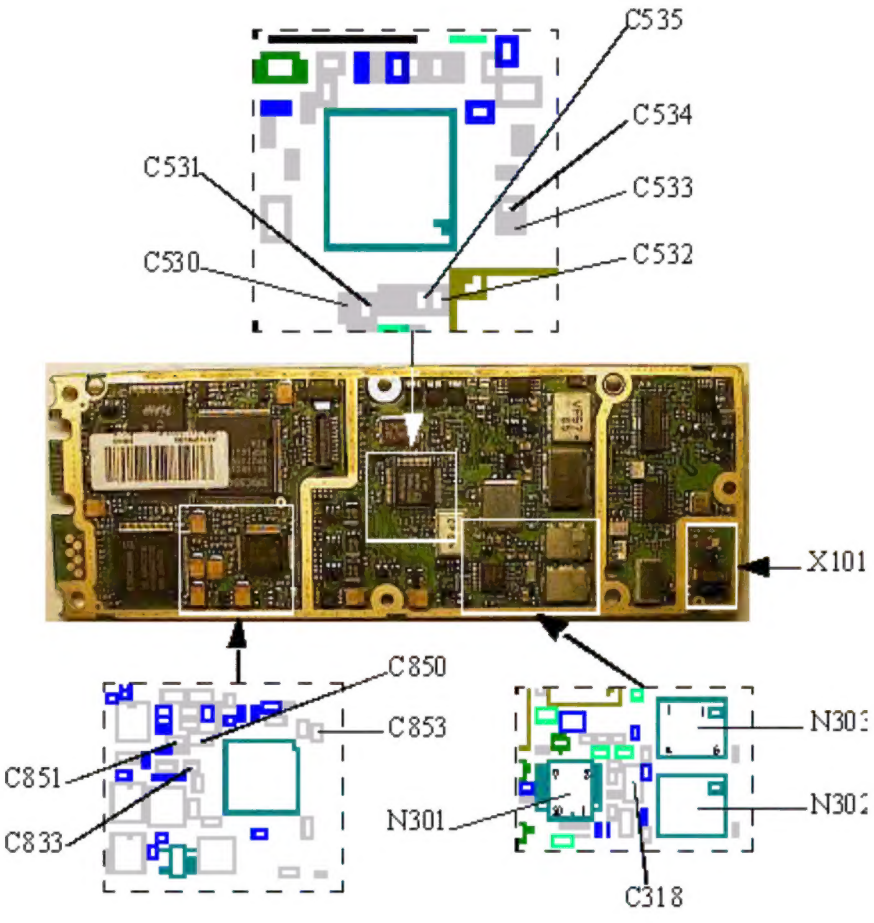

Fig. 2.1

Check for bad solderings at C318 (class A), N302 (class B) and N303 (class B, all in fig. 2.1).

Measure the resistances of C530 - C535 (all six of class A, >200 kohms and in fig. 2.1)

Measure the resistances of C850 (>100 kohms, class A, fig. 2.1), C851 (>1 kohms, class A, fig. 2.1), C833 (>1 kohms, class A, fig. 2.1) and C853 (>100 kohms, class A, fig. 2.1).

Measure the voltages of VVCO and VRAD (~3.8V, fig. 2.2).

- If any of the voltages are incorrect, proceed to chapter 3 (“Doesn´t start”-fault).

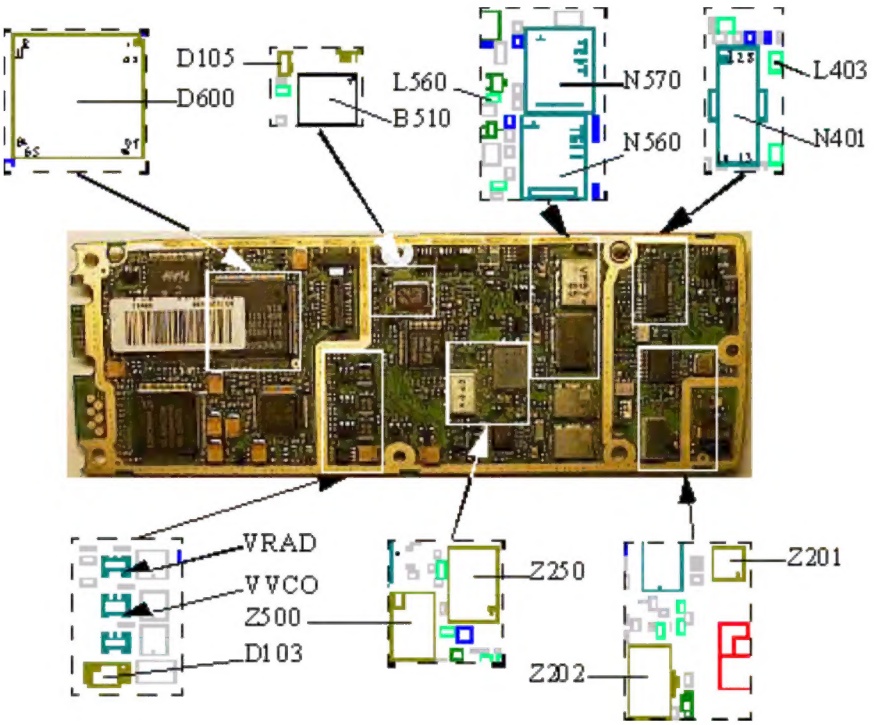

Fig. 2.2

Measure the DC voltage at pin 4 and 6 of N303 (fig. 2.1). The voltage at pin 4 (control voltage) should always vary between 0.8-2.8V (usually starts at 1.7V). The voltage at pin 6 (feed voltage) should also vary but usually starts at 3.3V.

- If the feed voltage is incorrect (usually missing), check the solderings at pins 8 and 102 of D600 (fig. 2.2). Also, check the solderings at D103 and 105 (fig. 2.2).

  * If the solderings are correct, use the schematics.

- If the control voltage is incorrect (usually 0V or 3.6V), check the solderings at pins 106-108 and 8 of D600.

  * If they’re correct, replace N301 (class B, fig. 2.1).

Check the solderings at Z250, Z500, Z201 (GSM900), Z202 (GSM1800, all in fig. 2.2) and Z205 (fig. 2.3).

If the fault remains, send the phone to the next level.

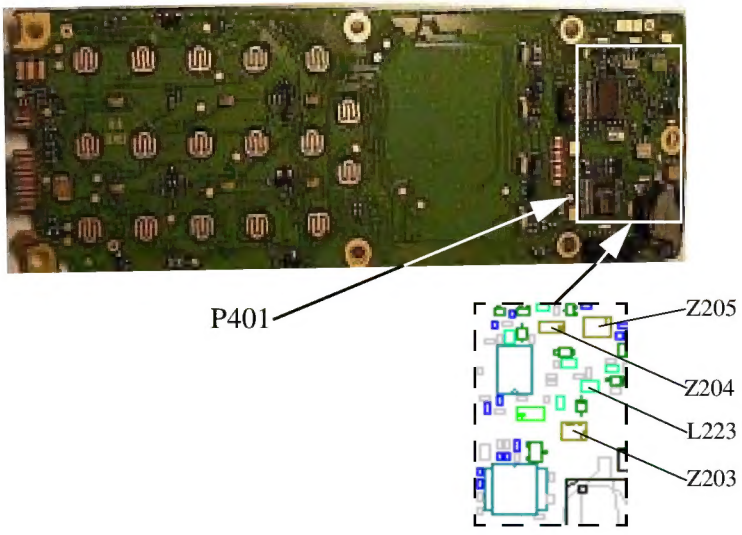

Fig. 2.3

2.2 Connect a call.

To try GSM900, connect a call at powerlevel 5 and signal strength of -68.5dBm.

To try GSM1800, connect a call at powerlevel 0 and signal strength of -68.5dBm.

- If it works, proceed to section 2.3
- If it doesn't work, it's probably a Tx-related fault.
- If channel 1 (or several of the lower channels) is the only channel you can't connect a call at, it's the N570 that's broken (class D2, fig. 2.2).

Open the phone and check for liquid damages.

Make sure the antenna connector (X101, class A, fig. 2.1) isn't damaged, badly soldered or dirty (glue, varnish, oxide...).

Measure the resistance from the P401 (fig. 2.3) test point to ground (>10 kohms, alternatively from N401 pin 14 to ground).

- If the resistance is too low, usually ~200 ohms, the N401 (class D1) has broken.

Check the solderings at N560 (GSM1800) and N570 (GSM900, fig. 2.2).

Check the solderings at Z205, Z203 (GSM900) and Z204 (GSM1800, all three class B and in fig. 2.3).

Make sure L403 (class A, fig. 2.2) isn't burnt.

Measure the resistances of C853 (>100 kohms, class A, fig. 2.1), L560 (~0 ohms, class A, fig. 2.2) and L223 (~0 ohms, class A, fig. 2.3).

If the fault isn't repaired, send the phone to the next level.

2.3 Read the Rx-level value from the instrument while the call is still connected.

If the Rx-level value is at 40-46 steps, make sure the output power is 31-35dBm (GSM900, powerlevel 5) or 28-32dBm (GSM1800, powerlevel 0).

- If it's correct, lower the signal strength to -102dBm (GSM900) and make sure the Rx-level value is 6-12 steps and that the Rx-quality value is 0-2 steps. At GSM1800 the signal strength should be -100.5dBm, the Rx-level value 7-13 steps and the Rx-quality value 0-2 steps.

  * If that is correct there's probably not a faulty phone. Try running it through the test again.

    * If the phone passes the test but can't connect a call to the "real" net, check if it is locked out of the system due to theft.

      * If it isn't, replace D600 (class B, fig. 2.2).

If the phone can't connect a call at channel 1 (or at another of the lower channels) (GSM900) but at other higher channels or if it can't switch from a high channel to channel 1 (or another of the lower channels) it means that N570 (class D1, fig. 2.2) is broken.

Open the phone and check for liquid damages.

Make sure the antenna connector (X101, class A, fig. 2.1) isn't damaged, badly soldered or dirty (glue, varnish, oxide...).

- The phone needs calibration if the Rx-level value is too high and the phone is to be sent to the next level.
- If the Rx-level value is below 39 steps at -68.5dBm signal strength there's a Rx-related fault.

Measure the resistances of C530-C535 (>200 kohms, all of class A, fig. 2.1). Check the solderings at Z250, Z500, Z201 (GSM900), Z202 (GSM1800, all in fig. 2.2) and Z205 (fig. 2.3).

If the fault still remains, send the phone to the next level.

If the Rx-quality value is too high, send the phone to the next level.

- If the output power is too low, check the solderings of N560 (GSM1800) and N570 (GSM900, both in fig. 2.2). Also check the solderings at Z205, Z203 (GSM900) and Z204 (GSM1800, all in fig. 2.3).

If the fault still remains, send the phone to the next level.

3 Doesn't start.

3.1 Find out if the phone starts when pressing the On/Off key.

Insert a fully charged battery into the phone and press the On/Off key.

- If the phone doesn't start, proceed to section 3.2.
- If the phone starts when assembled but not in the troubleshooter fixture, check the current consumption.

  * If it's more than 1.5A or as high as the current limit of the power supply, then N401 (class D1, fig. 3.1) is broken and the phone can't be repaired at this level. Measure the resistance from N401 pin 14 to ground. It should be >10 kohms but if it's approximately 200 ohms it means that N401 is broken.

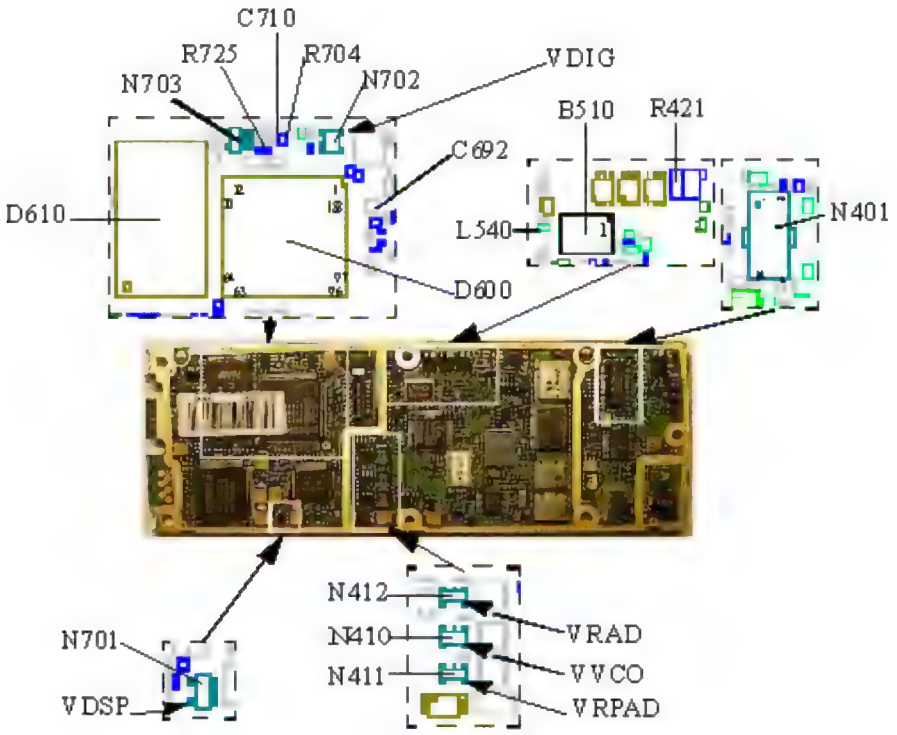

Fig. 3.1

- If the phone starts, check the charging function by connecting a charger at the system connector.

  * If it doesn't charge, proceed to chapter 6 ("Charging"-fault).

Open the phone and make a visual check. The component side of the circuit board is shown in fig. 3.1. Check for eventual liquid damages and burnt or damaged pads at the system connector. Check R421 (~0.1 ohms, class B, fig. 3.1) and faulty solderings at D600 and D610 (fig. 3.1).

- If R421 is replaced, the charging function have to be verified using the method mentioned in section 6.1.1.

Also check the manufacturing week of the circuit board. At the boards manufactured in 1998 week 20-22, 1540 (class A, fig. 3.1) is to be replaced. At the boars manufactured other dates, check the solderings at L540. As soon as the fault is fixed, send the phone through the normal flow. If the phone starts and the above is ok, it's probably ok or the fault is intermittent.

3.2 Visual check.

Make an outer visual check.

Make sure the battery screws are intact and tightened, that the isolating sleeve of the positive battery screw is mounted, that the volume buttons aren't stuck and that the system connector isn't damaged and dirty.

3.3 Current consumption with On/Off key pressed.

Insert a dummy battery into the phone, start it up by pressing the On/Off key and check the current consumption.

- If the phone doesn't consume any current when the On/Off key is pressed, proceed to section 3.4.5.
- If the phone consumes more than 200mA, remove the IRDA-module and the golden metal sleeve and try to start the phone again.

  * If the consumption is lower, the fault was in the IRDA-module or the golden sleeve.

  * If the consumption still is too high, proceed to section 3.4.3.
- If the phone consumes 1-200mA, starts (asks for SIM, seeks net, etc...) and works as long as you keep the On/Off key pressed, proceed to section 3.4.4.
- If the phone doesn't start, try to program it in the flash programmer.

  * If the phone doesn't start in the flash programmer, proceed to section 3.4.1.

  * If the phone doesn't start after programming it or if it is troublesome in the flash programmer, proceed to section 3.4.2.

  * If the phone starts after programming it, then the problem is probably fixed. To eliminate the risk for intermittent faults make sure the circuit board isn't liquid damaged and that the solderings at D600 and D610 (fig. 3.1) are ok. Also check the manufacturing date of the circuit board. L540 (class A, fig. 3.1) is to be replaced at all the circuit boards manufactured in 1998 weeks 20-22. At the boards made in any other week just check the solderings of L540.

3.4 Measuring at a powered circuit board.

3.4.1 Doesn't start in flash programmer.

Open the phone and check for liquid damages.

Make sure the system connector pads aren't damaged or burnt.

Measure the resistance of R421 (0.1 ohms, class B, fig. 3.1).

- If R421 is replaced, the charging function have to be verified using the method mentioned in section 6.1.1.

    * If it still is incorrect, send the phone to the next level.

Mount the board in the fixture. Start it up and keep it running by keeping DCIO high.

Check VDIG and VDSP voltages (3.2V, fig. 3.1).

- If any of the voltages are too low, measure the resistance from it to ground (VDIG >500 ohms, VDSP >25 kohms).

    * If the resistance is correct, replace the corresponding circuit, VDIG - N702 (class A), VDSP - N701 (class A, both in fig. 3.1).

    * If the resistance is too low, send the phone to the next level.

- If any of the voltages are too high, replace the corresponding circuit.

Check the powerreset (PWRRST) voltage at C710 (>3V, fig. 3.1).

- If it's lower, check R704 (~0 ohms, class A, fig. 3.1) and R725 (~100 kohms, class A, fig. 3.1).

    * If they are ok, first replace C710 and if it doesn't help, replace N703 (both class A and in fig. 3.1).

Measure the voltages at VRAD, VVCO and VRPAD (~3.8V, fig. 3.1).

- If any of the voltages are incorrect, measure the resistance from it to ground (>50 kohms).

    * If it's correct, replace the corresponding transistor (see fig. 3.1, all of them class A).

    * If the resistance is too low, send the phone to the next level.

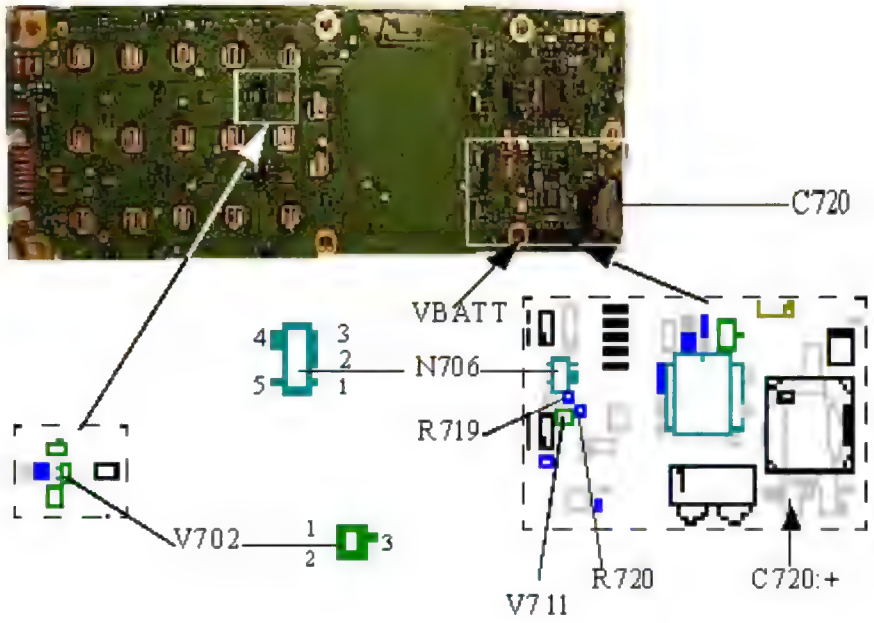

Fig. 3.2

Check the amplitude of the 13MHz system clock at B510 pin 1 (~1V t-t, class C, fig. 3.1). Measure it by using an oscilloscope, spectrum analyzer, frequency counter or a diode probe.

- If the amplitude is too low, send the phone to the next level.

Make sure there aren't any faulty solderings at D600 or D610 (fig. 3.1).

- If it looks good, replace D600 (class B) first and then D610 (class A). Note! Don't replace any of the circuits unless you've established the fact that B510 is functional. Try programming the phone in between.

3.4.2 The phone is programmable but doesn't start afterwards or the phone is troublesome in the flash programmer.

Open the phone and check for liquid damages.

Make sure the system connector pads aren't damaged or burnt.

Measure the resistance of R421 (0.1 ohms, class B, fig. 3.1).

- If R421 is replaced, the charging function have to be verified using the method mentioned in section 6.1.1.

  * If it still is incorrect, send the phone to the next level.

Mount the board in the fixture. Start it up and keep it running by keeping DCIO high.

Measure the VDIG and VDSP voltages (~3.2V, fig. 3.1).

- If any of the voltages are too low, measure the resistance from it to ground (VDIG - >500 ohms, VDSP - >25 kohms).

  * If the resistance is correct, replace the corresponding regulator (VDIG - N702, VDSP - N701, both of class A, fig. 3.1).

  * If it's too low, send the phone to the next level.

- If any of the voltages are too high, replace the corresponding circuit.

Check the power reset (PWRRST) voltage at C710 (fig. 3.1, >3V).

- If it's less, measure the resistance of R704 (~0 ohms, class A, fig. 3.1) and R725 (~100 kohms, class A, fig. 3.1).

  * If they're correct, replace C710 at first and if that doesn't help, N703 (both class A, fig. 3.1) .

Measure the VRAD, VVCO and VRPAD voltages (~3.8V, fig. 3.1).

- If any of the voltages are incorrect, measure the resistance from it to ground (>50 kohms).

  * If the resistance is correct, replace the corresponding transistor (see fig. 3.1, all of class A).

  * If the resistance is too low, send the phone to the next level.

Make sure there aren't any faulty solderings at D600 or D610 (fig. 3.1).

- If it looks good, replace D610 (class A) at first and then D600 (class B). Try programming the phone in between.

3.4.3 Consumes more than 200mA.

Open the phone and check for liquid damages.

Make sure the system connector pads aren't damaged or burnt.

Mount the board in the fixture. Start it up and keep it running by keeping DCIO high.

Check the current consumption again.

- If it's less than 200mA, check the back cover gasket.

  * If it's ok, replace the display and the elastomer and try again.

Check the resistance from VBATT to ground (>1 Mohms)

- If it's less, send the phone to the next level.

Check the VDIG and VDSP voltages (~3.2V, fig. 3.1).

- If any of the resistances are too low, measure the resistance from it to ground (VDIG - >500 ohms, VDSP - >25 kohms).

* If the resistance is correct, replace the corresponding regulator.

* If it's too low, send the phone to the next level.

- If any of the voltages are too high, replace the corresponding regulator.

Measure the VRAD, VVCO and VRPAD voltages (~3.8V, fig. 3.1).

- If any of the voltages are incorrect, measure the resistance from it to ground (>50 kohms).

  * If the resistance is correct, replace the corresponding regulator (see fig. 3.1, all of class A).

  * If the resistance is too low, send the phone to the next level.

3.4.4 The phone runs as long as the On/Off key is pressed.

Open the phone and check for liquid damages.

Make sure the system connector pads aren't damaged or burnt.

Mount the board in the fixture. Start it up and keep it running by keeping DCIO high.

Measure the voltage at C692 (>3V, fig. 3.1).

- If it's correct, check the soldering at D600 pin 119 (fig. 3.1).
- If it's incorrect, measure the resistance of C692 (>200 kohms, class A)

  * If the resistance is correct, measure the input voltage at N706 pin 2 (VBATT, fig. 3.2) and the output voltage at pin 3 (~3.5V). Make sure that there's ground at N706 pin 1.

    * If VBATT or ground is missing there's a foil damage and the phone is to be discarded.

    * If VBATT and ground are correct but not the output voltage, replace N706 (class A, fig. 3.2).

    * If they're all correct, measure the voltage at the positive side of the backup capacitor, C720 (~3.2V, class A, fig. 3.2).

      * If it's incorrect, measure the resistances of R720 (180 kohms, class A, fig. 3.2) and R719 (47 kohms, class A, fig. 3.2).

        * If they're correct, replace V711 (class A, fig. 3.2).

      * If the voltage is correct, measure the resistance from the positive side of C720 (fig. 3.2) to C692 (fig. 3.1, ~0 ohms).

        * If it's incorrect there's a foil damage and the phone is to be discarded.

If the fault remains, send the phone to the next level.

3.4.5 The phone doesn't consume any current when the On/Off key is pressed.

Open the phone and check for liquid damages.

Make sure the system connector pads aren't damaged or burnt and that the keypads aren't broken or dirty, especially the On/Off key (fig. 3.3).

Fig. 3.3

Give the board power.

Make sure there's VBATT voltage at the marked pad of the On/Off key pads (fig. 3.3).

- If VBATT is missing there's a foil damage and the phone is to be discarded.
- If VBATT is correct, measure the resistance from the other pad (ONSRQ, fig. 3.3) to V702 pin 1 (fig. 3.2, ~0 ohms).

  * If the resistance is incorrect there's a foil damage and the phone is to be discarded.

  * If the resistance is correct, replace V702.

If the fault remains, send the phone to the next level.

4 Audio.

4.1 Type of fault.

Connect a call to another phone and check the microphone and the earphone.

Connect a handsfree to the phone and check the external microphone and the external speaker.

- If only the earphone is silent or the sound is intermittent, proceed to section 4.2.
- If you can't be heard at the other end when the phone isn't used with a handsfree, proceed to section 4.3.
- If there's only no sound in the handsfree speaker, proceed to section 4.4.
- If you can't be heard at the other end only when the phone is used with a handsfree, proceed to section 4.5.
- If neither the microphone nor the speaker works in the handsfree, proceed to section 4.6.
- If both the microphone and the earphone works only when using the phone in the handsfree, proceed to section 4.7.
- If the sound is distorted, "chopped", scrambled, full of static or similar, proceed to section 4.8.
- If the mute function is faulty, proceed to section 4.9.
- If there is a fault that doesn't fit into the descriptions above, proceed to section 4.10.

4.2 Earphone fault.

Open the phone and check for liquid damages. If there is no liquid damage, replace the front and try again.

- If the fault remains, replace J810 (fig. 4.1, class A) and try again.

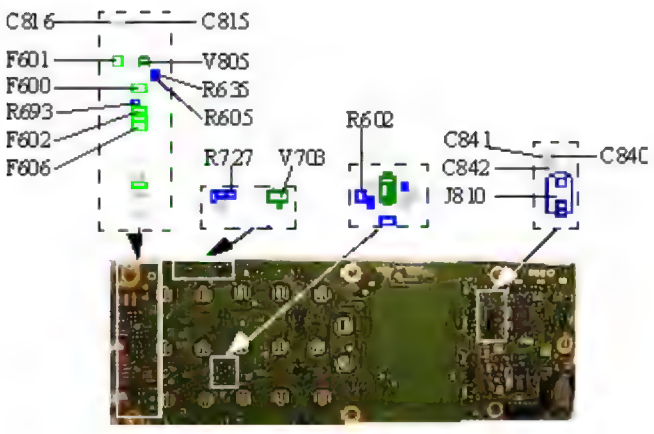

Fig. 4.1

Check the solderings at N800 pins 24 and 26 (fig. 4.2).

- If they're ok, measure the resistance from the J810 pins to ground (>25 kohms) and from pin to pin (>50 kohms).

  * If the resistance to ground is too low, replace C840 and C841 (both of them class A, fig. 4.1).

  * If the resistance from pin to pin is too low, replace C842 (class A, fig. 4.1).

If the fault remains, send the phone to the next level.

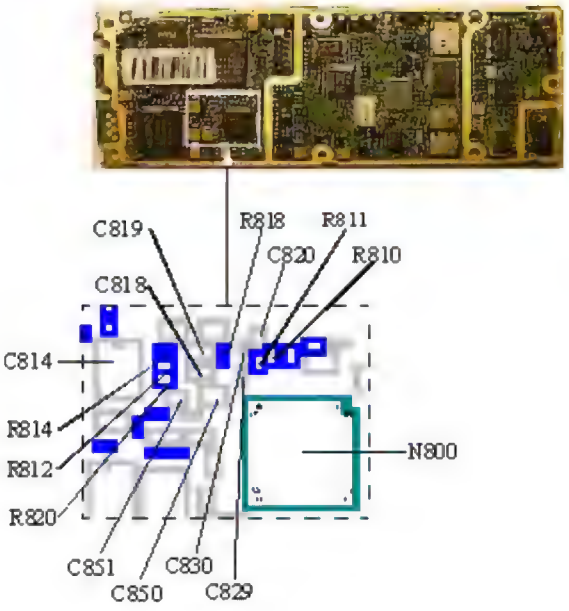

Fig. 4.2

4.3 Microphone fault.

Open the phone and check for liquid damages, especially around X830 (fig. 4.3).

- If it isn't liquid damaged, replace the front and elastomer and try again.

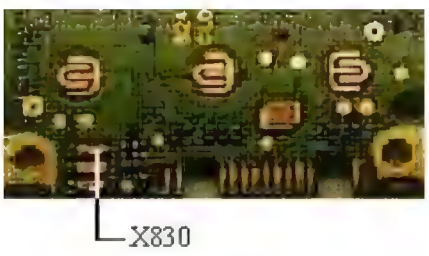

Fig. 4.3

If the fault remains, check the solderings at N800 pins 13-18 (fig. 4.2).

- If they're correct, measure the resistances of C850 (>100 kohms), C851 (>1 kohms), C829 (>100 kohms), C830 (>100 kohms), C818 (>100 kohms) and C819 (>100 kohms, all of class A and in fig. 4.2). Measure the resistance of C815 (fig. 4.1, >50 kohms).

  * If it's less, replace C815 and C816 (both of class A and in fig. 4.1).

Measure the resistance of R818 (fig. 4.2, >10 kohms).

- If it's less, replace R818 and C820 (both of class A, fig. 4.2).

Measure the resistance of R810 (~0 ohms), R811 (~0 ohms), R812 (~1.5 kohms), R814 (~470 ohms) and R820 (1.5 kohms, all of class A and in fig. 4.2).

- If the resistance of R820 is too low even after it has been replaced, replace V805 (class A, fig. 4.1).

Measure the resistance of C814 (>100 kohms, class A, fig. 4.2).

If the fault remains, send the phone to the next level.

4.4 Handsfree speaker fault.

Check the contact pads at the system connector for dirt, liquid damages and oxidation. Replace the system connector if needed.

Open the phone and check for liquid damages, especially around the system connector pads.

Check the soldering at N800 pin 22 (fig. 4.2).

Measure the resistance of R804 (fig. 4.4, >50 kohms).

- If it's less, replace F601 (class A, fig. 4.1). If that doesn't help, replace R804 (class A, fig. 4.4).

Measure the resistances of R806 (~100 ohms, class A, fig. 4.4) and C813 (>100 kohms, class A, fig. 4.4).

If the fault remains, send the phone to the next level.

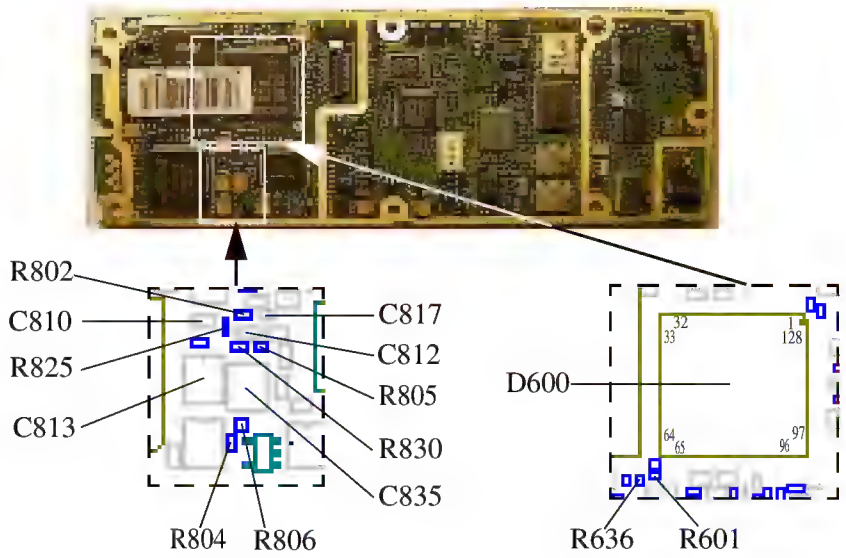

Fig. 4.4

4.5 Handsfree microphone fault.

Check the contact pads at the system connector for dirt, liquid damages and oxidation. Replace the system connector if needed.

Open the phone and check for liquid damages, especially around the system connector pads.

Check the soldering at N800 pin 19 (fig. 4.2).

Measure the resistance of R825 (~3.3 kohms), R830 (~470 ohms), R802 (~3.9 kohms), R805 (15 kohms), C835 (>1 kohms), C817 (>100 kohms), C810 (>10 kohms) and C812 (>100 kohms, all of class A and in fig. 4.4).

If the fault remains, send the phone to the next level.

4.6 Handsfree isn't detected.

Check the contact pads at the system connector for dirt, liquid damages and oxidation. Replace the system connector if needed.

Open the phone and check for liquid damages, especially around the system connector pads.

Check the solderings at D600 pins 67 and 70 (fig. 4.4).

Measure the resistance of R635 (~22 kohms, fig. 4.1), R636 (~22 kohms, fig. 4.4), R601 (~1 kohms, fig. 4.4) and R605 (~1 kohms, fig. 4.1, all of class A).

If the fault remains, replace D600 (class B, fig. 4.4). If that doesn't help, send the phone to the next level.

4.7 Microphone and earphone fault.

Check the contact pads at the system connector for dirt, liquid damages and oxidation. Replace the system connector if needed.

Open the phone and check for liquid damages, especially around the system connector pads.

Check the solderings at D600 pins 67 and 70 (fig. 4.4).

Measure the resistance from EXTAUD (fig. 4.5) to ground (>20 kohms).

- If it's less, replace F600 (class A, fig. 4.1).

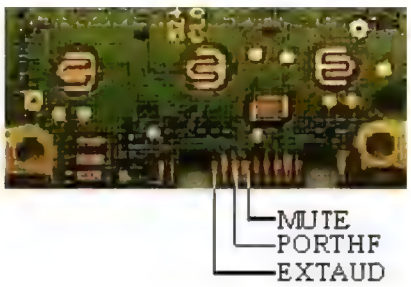

Fig. 4.5

Measure the resistance from PORTHF (fig. 4.5) to ground (>10 kohms).

- If it's less, replace F602 (class A, fig. 4.1).

Measure the resistance of R635 (~22 kohms, fig. 4.1), R636 (~22 kohms, fig. 4.4), R601 (~1 kohms, fig. 4.4) and R605 (~1 kohms, fig. 4.1, all of class A).

If the fault remains, replace D600 (class B, fig. 4.4). If that doesn't help, send the phone to the next level.

4.8 Signal processing error.

Open the phone and check for liquid damages.

Give the board power and start it up.

Check the VDIG and VDSP voltages (~3.2V, fig. 4.6).

- If any of the voltages are incorrect, proceed to chapter 3 ("Doesn´t start"-fault).

Check the VDSPC voltage (~2.5V, fig. 4.6).

- If it's less, measure the resistance from it to ground (>10 kohms).

* If the resistance is too low, replace components in the following order: C903 (fig. 4.6), C904 (fig. 4.6), C905 (fig. 4.6), R727 (fig. 4.1) and D900 (fig. 4.6, all of class A). Check the resistance from VDSPC to ground after every component replaced.

* If the resistance is correct, replace V703 (class A, fig. 4.1).

If all the feed voltages are correct, check the solderings of D600 (fig. 4.4), D900 (fig. 4.6) and N800 (fig. 4.2).

- If they're correct, replace D900 (class A, fig. 4.6). If that doesn't help, replace D600 (class B, fig. 4.4).

If the fault remains, send the phone to the next level.

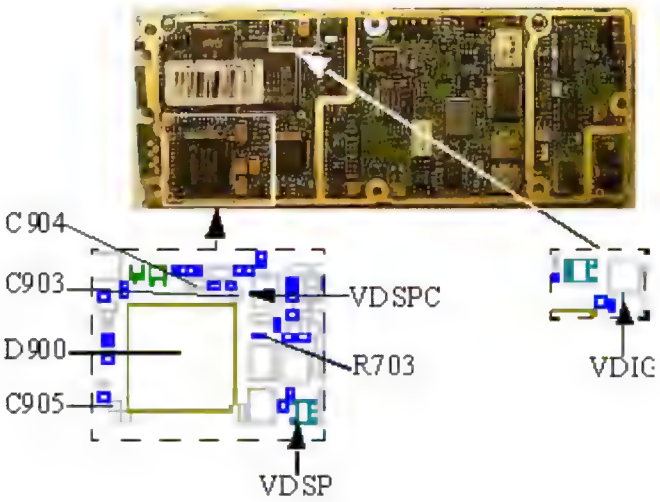

Fig. 4.6

4.9 Music mute fault.

Check the contact pads at the system connector for dirt, liquid damages and oxidation. Replace the system connector if needed.

Open the phone and check for liquid damages, especially around the system connector pads.

Check the soldering at D600 pin 69 (fig. 4.4).

Measure the resistance of R602 (~470 ohms, class A, fig. 4.1).

Measure the resistance from MUTE (fig. 4.5) to ground (>100 kohms).

- If it's less, replace F606 (class A, fig. 4.1).
- If it's correct, replace D600 (class B, fig. 4.4).

If the fault remains, send the phone to the next level.

4.10 Other audio fault.

Check the contact pads at the system connector for dirt, liquid damages and oxidation. Replace the system connector if needed.

Open the phone and check for liquid damages, especially around the system connector pads.

Give the board power and start it up.

Check the VDIG and VDSP voltages (~3.2V, fig. 4.6).

- If any of the voltages are incorrect, proceed to chapter 7.

Check the VDSPC voltage (~2.5V, fig. 4.6).

- If it's less, measure the resistance from it to ground (>10 kohms).

  * If the resistance is too low, replace components in the following order: C903 (fig. 4.6), C904 (fig. 4.6), C905 (fig. 4.6), R727 (fig. 4.1) and D900 (fig. 4.6, all of class A). Check the resistance from VDSPC to ground after every component replaced.

  * If the resistance is correct, replace V703 (class A, fig. 4.1).

If all the feed voltages are correct, check the solderings of D600 (fig. 4.4), D900 (fig. 4.6) and N800 (fig. 4.2).

Measure the resistances of R703 (~0 ohms, fig. 4.6), R693 (~0 ohms, fig. 4.1), C850 (>100 kohms, fig. 4.2) and C851 (>1 kohms, fig. 4.2, all of class A).

If the fault remains, send the phone to the next level.

5 Display

5.1 Type of fault.

Insert a fully charged battery into the phone and start it up using the On/Off-button.

- If it doesn't start, proceed to chapter 3 ("Doesn´t start"-fault).
- If the display is missing one or more of the segments, proceed to section 5.2.
- If the display is empty, proceed to section 5.3.

5.2 Segments are missing.

Open the phone and check for liquid damages. If it isn't liquid damaged, replace the display.

5.3 The display is empty.

Insert a dummy battery into the phone, start it up and check the current consumption (should be less than 200mA). Open the phone and check for liquid damages and make sure the display isn't damaged.

- If the display isn't damaged, replace the elastomer and try again.
- If that doesn't help, replace the display and try again.

If the phone consumes more than 200mA, proceed to chapter 3 ("Doesn´t start"-fault).

Give the board power and start it up without a display mounted. Measure the voltages at the display pads (H623, fig. 5.1). Component placement is shown in fig. 5.2.

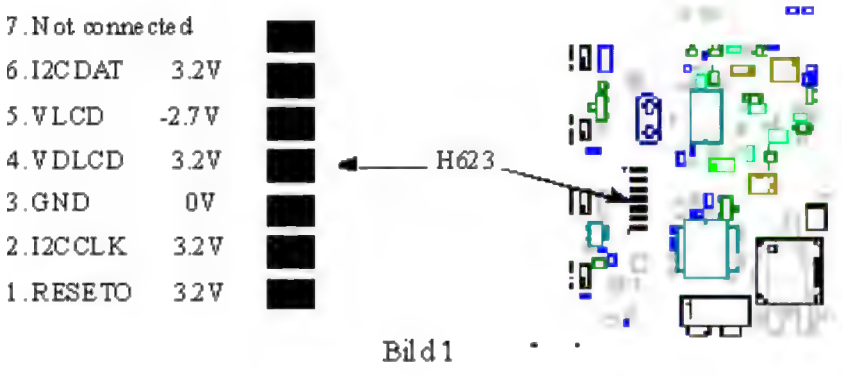

Fig. 5.1

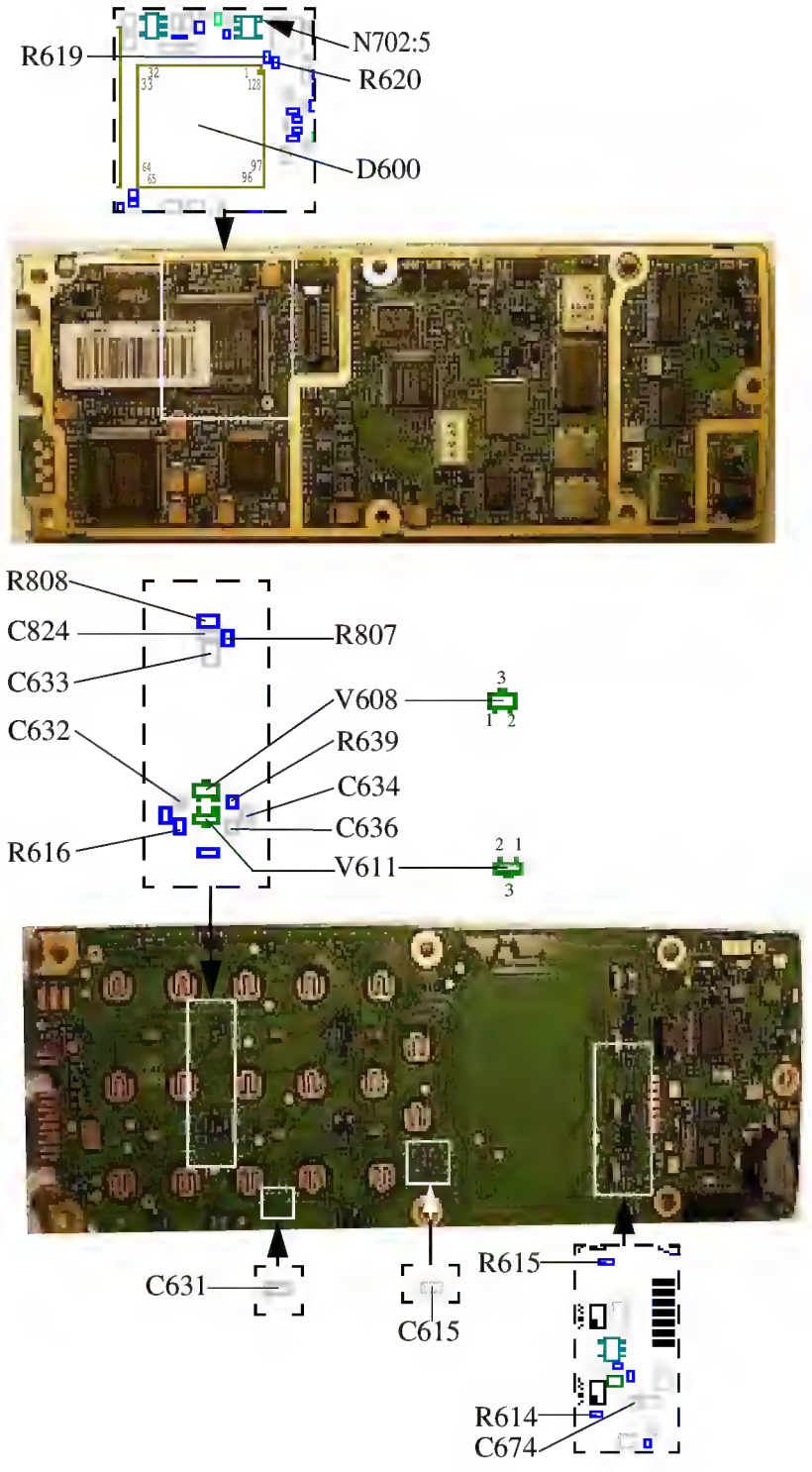
R619
N702:5
R620
D600
R808
C824
R807
C633
V608
C632
R639
C634
C636
R616
V611
C631
C615
R615
R614
C674

Fig. 5.2

If:

1. **RESETO (3.2V)** is incorrect, measure the resistance from the pad to pin 77 of D600 (0 ohms). Also check the soldering at that pin. If the resistance is substantially higher there's a foil damage and the phone should be discarded. If the resistance is correct, replace D600 (class B).
2. **I^2CCLK (3.2V)** is incorrect, measure the resistance from the pad to pin 4 of D600 (10 kohms). If it's higher, measure the resistance of R615 (10 kohms, class A). If the resistance of R615 is correct there's a foil damage and the phone should be discarded. Check VDIG (3.2V) at R620 (2.2 kohms, class A). If it is too low, proceed to chapter 3 ("Doesn´t start"-fault). If all of the above is correct, replace D600.
3. **GND** is incorrect, i.e. there is too high resistance from the pad to ground, there's a foil damage and the phone should be discarded.
4. **VDLCD (3.2V)** is incorrect, measure the resistance from the pad to pin 45 of D600 (0 ohms). If it's higher there's a foil damage and the phone should be discarded. If it's correct, measure the resistance from the pad to ground (>2.5 Mohms). If it's incorrect, replace C615 and C674 (both of them class A). If that doesn't help, replace D600 (class B).
5. **VLCD (-2.7V)** is incorrect, make sure that VDIG at N702 pin 5 is 3.2V. Measure the resistance from the pad to pin 1 of V611 (0 ohms). If it's too high there's a foil damage and the phone should be discarded. Check the solderings at D600 pins 95 and 96. Measure the voltages at V611 (pin 1: -2.7V, pin 2: -1.6V, pin 3: -2.5V) and V608 (pin 1: -1.6V, pin 2: 0V, pin 3: -1.0V). If any of the voltages are incorrect, replace the corresponding diode and try again. If the problem still remains, measure the resistances of C632, C634, C636 (>2.5 Mohms), C631, C633 (>100 kohms) and C824 (>25 kohms). If any of the resistances are incorrect, replace the corresponding capacitor (all of them class A). Also measure the resistances of R615, R639 (100 kohms), R807 (82 kohms) and R808 (33 kohms). If any of the resistances are incorrect, replace the corresponding resistor (all of them class A). If the fault remains, replace D600 (class B).
6. **I^2CDAT (3.2V)** is incorrect, measure the resistance from the pad to pin 3 of D600 (10 kohms). If it's higher, measure the resistance of R614 (10 kohms, class A). If it's correct there's a foil damage and the phone should be discarded. Check if there's VDIG voltage (3.2V) at R619 (2.2 kohms, class A). If the voltage is lower, proceed to chapter 3 ("Doesn´t start"-fault). If all of the above is correct, replace D600 (class B).

If the fault isn't fixed, send the phone to the next level.

6 Charging.

6.1 Type of charging fault.

Make a visual check of the battery screws and the system connector. Replace if needed. Start the phone using the On/Off key with a fully charged battery inserted.

- If it doesn't start, proceed to chapter 3 ("Doesn´t start"-fault).
- If the phone starts and indicates that it's charging, proceed to section 6.2.
- If the phone starts but doesn't indicate that it's charging, turn it off and connect a charger into the system connector.
- If it indicates that it's charging and the red top indicator is lit the phone is ok.
- If it doesn't display anything in the display and the red top indicator isn't lit, proceed to section 6.3.
- If the phone doesn't charge the battery although it indicates that it does, proceed to section 6.4.
- If the phone starts and indicates that it's charging but the red top indicator isn't lit, proceed to chapter 9 ("Illumination and buzzer"-fault).

6.1.1 Verification of the charging function.

Attach a real battery to the phone. The batterys voltage must be high enough to get the phone started, otherwise will not the charging begin at once.

Cut a piece of cable from a charger and make a charging test cable. Connect the charging test cable to a power supply that shows the current consumption. Make sure the positive side from the power supply connects to DCIO (the lonely pin on the system connector, pin 12). You can also use a normal charger with an ammeter connected in serie.

Set the power supply on 7.6 V and current limitation on 700 mA. Connect the charging cable to the phones system connector and check the current consumption.

If the phone starts and shows charging in the display and the current consumption on the power supply varies between ~700 mA (the solution with a normal charger and a ammeter gives ~500-800 mA depending on what kind of charger you use) and ~5 mA with a few seconds interval, is there no charging fault.

After every repair of the charging function, you have to verify the function using the method mentioned above.

6.2 Indicates charging without charger connected.

Open the phone and check for liquid damages. Give the board power and start it up using the On/Off key.

Fig. 6.1

Check the VDIG (~3.2V) voltage at the marked side of C600 (fig. 6.2), VRAD (~3.8V) at N450 pin 13 (fig. 6.1) and the resistance of R703 (~0 ohms, class A, fig. 6.2).

- If any of the voltages are incorrect, proceed to chapter 3 (“Doesn´t start”-fault).
- If the voltages are correct, send the phone to the next level.

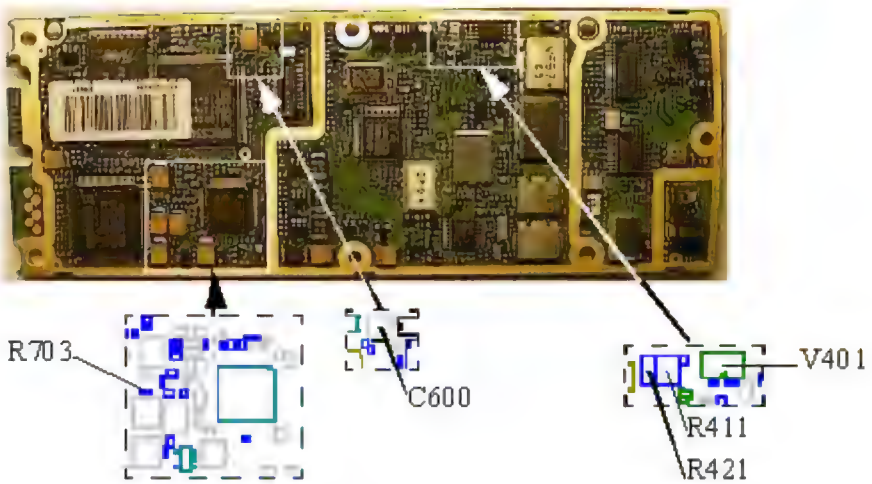

Fig. 6.2

6.3 Doesn’t begin to charge.

Open the phone and check for liquid damages. Make sure the system connector pads aren’t burnt and that there isn’t oxide on them, especially GND (pad 10, fig. 6.1).

Measure the resistance from DCIO to VBATT (~390 ohms, fig. 6.1).

- If the resistance is too low, replace V401 (class A).
- If it’s too high, measure the resistance of R421 (class B, ~0.1 ohms) and R411 (class A, ~390 ohms, both in fig. 6.2).

* If they are correct and the resistance from DCIO to VBATT still is too high there's a foil damage and the phone is to be discarded.

Give the board power and start it up by grounding pin 6 of N450 (fig. 6.1).

- If it doesn't start, replace V401 (class A, fig. 6.2). If that doesn't help, replace V704 (class A, fig 6.1).

After every repair of the charging function, you have to verify the function using the method mentioned in section 6.1.1.

If the fault remains, send the phone to the next level.

6.4 Starts, but doesn't charge although it indicates charging.

Open the phone and check for liquid damages. Make sure the system connector pads aren't burnt and that there isn't oxide on them, especially GND (pad 10, fig. 6.1).

Measure the resistance from DCIO to VBATT (~390 ohms, fig. 6.1).

- If the resistance is too high, measure the resistance of R421 (class B, ~0.1 ohms) and R411 (class A, ~390 ohms, both fig. 6.2).

  * If they are correct there's a foil damage and the phone is to be discarded.

After every repair of the charging function, you have to verify the function using the method mentioned in section 6.1.1.

If the fault remains, send the phone to the next level.

7 SIM fault

7.1 What is "SIM fault".

Insert a working SIM-card and a fully charged battery into the phone and start it up.

If the display says:

- **"Wrong card"** or **"Insert correct card"** the phone is SIM-locked and cannot be repaired at this level
- **"Phone lock"** the customer has locked the phone with a personal code. The phone is unlocked in the reset program in the ordinary flow.
- **"Pin?"** or **"Enter pin"** the SIM is locked with a personal code.
- **"Insert card"** then, and only then, there's a SIM fault.

Open the phone and check for liquid damages. Replace the SIM-card holder, assemble the phone and try again. If it doesn't work, open the phone. Make sure that the system connector hasn't damaged V620 and R685 (both of them class A, fig.7.2). Replace and try again if damaged. If it still doesn't work, open the phone and check the solderings at D600 pads 72 to 75 (fig.7.2). If the solderings are correct, measure the signals to the SIM-card using an oscilloscope.

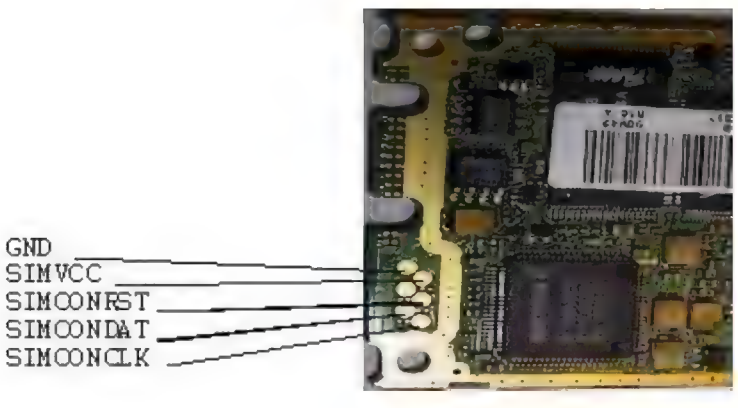

Fig. 7.1

Measure the resistance from the SIM-pads in fig. 7.1 to ground (all >40 kohms except GND which should be ~0 ohms).

- If the resistance from the GND pad to ground is too high there's a foil damage and the phone is to be discarded.
- If the resistance from:

  * **SIMVCC** to ground is too low, replace C625, C626 and C627 (all of class A, fig. 7.2).

  * **SIMCONRST** to ground is too low, replace C628 (class A, fig. 7.2).

  * **SIMCONDAT** to ground is too low, replace C630 (class A, fig. 7.2).

  * **SIMCONCLK** to ground is too low, replace C629 (class A, fig. 7.2).

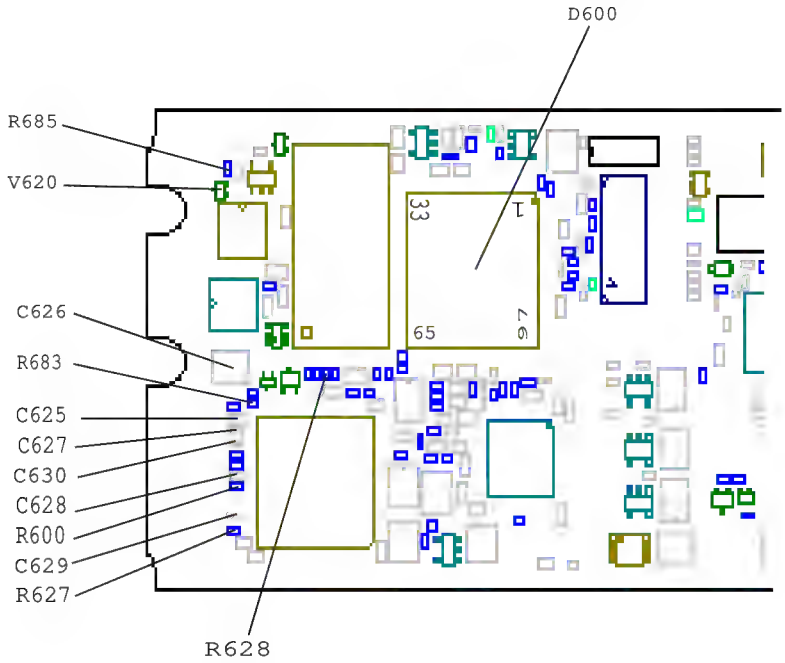

Fig. 7.2

Measure the resistances of R600 (~33 ohms), R627 (~0 ohms), R628 (~33 ohms) and R683 (~0 ohms, all of class A, fig. 7.2).

If all of the measurements are correct, replace D600 (class B, fig. 7.2).

If the fault isn't fixed, send the phone to the next level.

8 Keyboard.

8.1 Kind of keyboard fault.

Insert a SIM card and a fully charged battery into the phone. Start it up by pressing the On/Off key.

- If it doesn't start at all, proceed to chapter 3 ("Doesn´t start"-fault).

Press all the keys (including the volume keys) to verify which ones are faulty. Verification is most easily done like this:

1. Go to "menu/settings/key sound" and choose "click".
2. Press the keys 1-9, *, 0, #. You should hear a clicking sound at every key pressed and the corresponding symbol should appear in the display.
3. Press "Yes", "No", "clr", "<" and ">". When pressing "Yes" the phone should attempt to connect a call and pressing "No" should make it disconnect it. Pressing the "clr" key should erase symbols in the display and by pressing "<" and ">" you should skim through the menu.
4. Press the volume buttons. A clicking sound should be heard at every press.

- If one or both of the volume keys are non-functional, proceed to section 8.2.
- If one or more of the keyboard keys are non-functional, proceed to section 8.3.

8.2 The volume keys are non-functional.

Open the phone and check for liquid damages, especially around X820 (fig. 8.1). Replace the flex film for the volume keys, assemble the phone and try again.

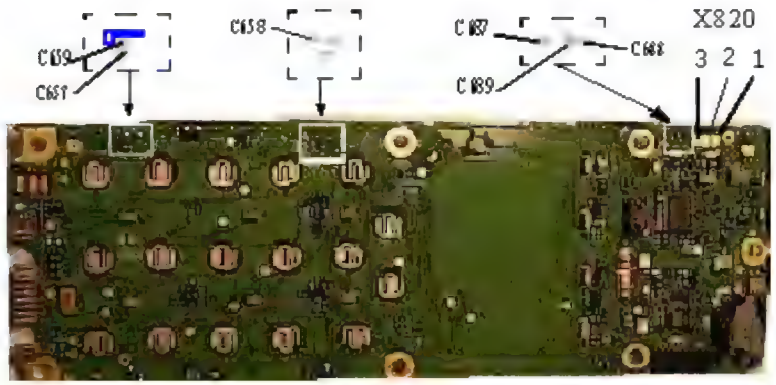

Fig. 8.1

Measure the resistances from the pads at X820 to ground (>1 Mohms at all three).

- If any of them are less, proceed to section 8.2.1.
- If they're correct, proceed to section 8.2.2.

8.2.1

If the resistance to ground is too low from pad:

1 - replace C659 and C689 (class A, fig. 8.1).

2 - replace C658 and C688 (class A, fig. 8.1).

3 - replace C657 and C687 (class A, fig. 8.1).

If the fault remains, replace D600 (class B, fig. 8.2).

8.2.2

Check the solderings at D600 pins 122, 123 and 128. Measure the resistances from X820 (fig.8.1) pad 1 to D600 pin 122, from X820 pad 2 to D600 pin 128 and from X820 pad 3 to D600 pin 123 (all of them ~0 ohms). If any of the resistances are incorrect there's a foil damage and the phone is to be discarded. If they're all correct, replace D600 (class B, fig. 8.2).

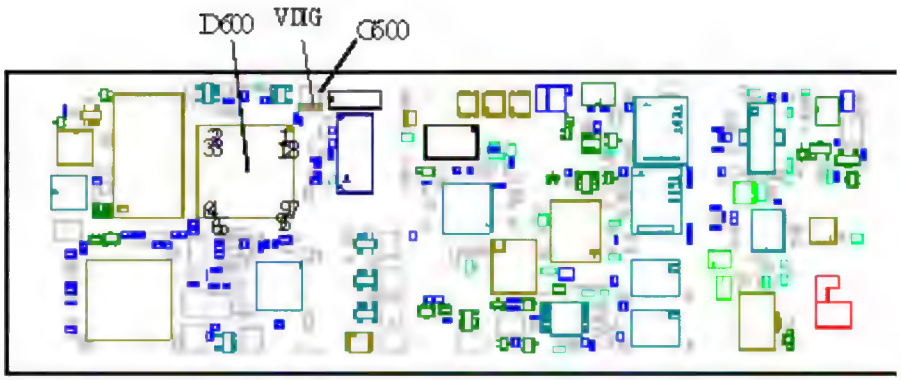

Fig. 8.2

8.3 One or more of the keyboard keys non-functional.

Open the phone and check for liquid damages, especially around the keys that are non-functional. Clean the keypads thoroughly and mount the phone with a new keyboard. Check the keys as in 5.1. If that didn't help, open the phone and check the solderings at D600 (fig.8.2) pins 120-128 and 1. If they're correct, give the board power and start it up.

Measure VDIG (3.2V) at the marked side of C600 (fig. 8.2).

- If VDIG is incorrect, proceed to chapter 3 ("Doesn´t start"-fault).

The functional scheme is shown in fig. 8.3

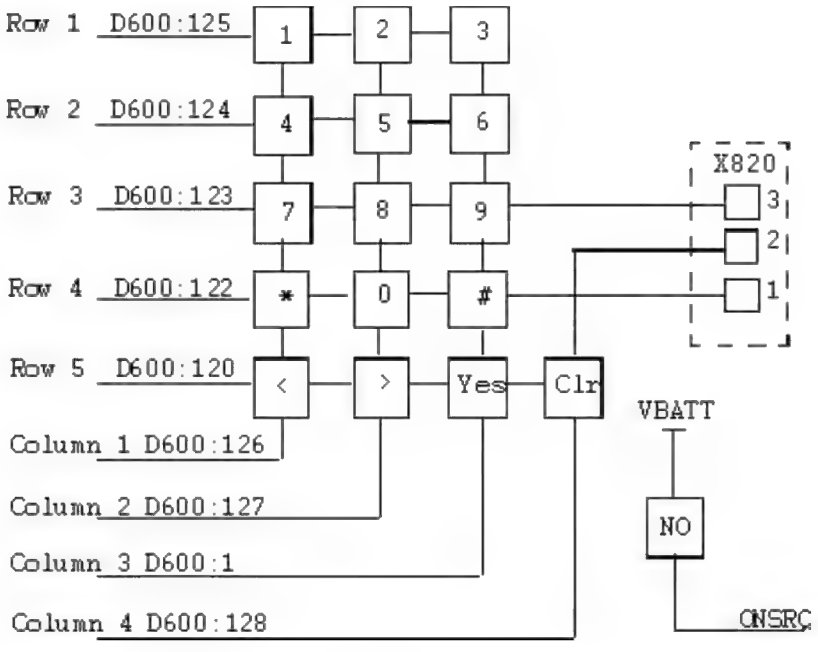

Fig. 8.3

Make sure there's voltage (3.2V) at the pads of the faulty keys according to fig. 8.4 below. Note that the "No" key has 4.8V.

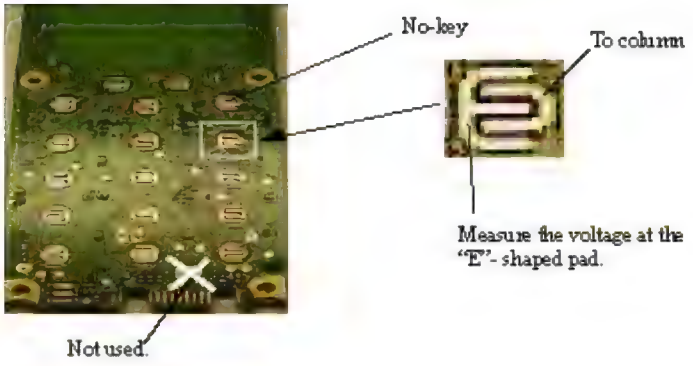

Fig. 8.4

If the voltage is missing at an entire row of keys, measure the voltage at the corresponding pin of D600 (see fig. 8.3).

- If the voltage is correct at D600 there's a foil damage and the phone is to be discarded.
- If the voltage is missing there too, replace D600 (class B, fig.8.2).

If VDIG is missing at some keys of a row, for instance key 2 and 3, but at key 1 there's voltage, there's a foil damage and the phone is to be discarded. This can be verified by measuring the resistance from a functional key to one that isn't (~0 ohms). If the resistance is incorrect there's a foil damage.

If an entire column is non-functional, measure the resistance from the pad to the corresponding pin of D600 (see fig. 8.3, measure from the side of the pad that's "C" shaped). If there's a foil damage the phone is to be discarded. If only part of a column is non-functional, measure the resistance from a functional keypad in that column to a non-functional to verify a foil damage.

9 Illumination and buzzer.

9.1 Type of fault.

Insert a dummy battery and a SIM card into the phone, start it up and wait for the phone to get serv (with the GSM test instrument or the GSM net). If the phone doesn't make a beep when started, go to "menu/Ring Vol" and raise the volume to the max. If it already is at the max, lower the volume and raise it again to the max.

- If the buzzer sounds faintly or not at all, proceed to section 9.2.
- If the background illumination for the keys and/or the display isn't lit at start, proceed to section 9.3.
- If the top indicator doesn't blink green when the phone has gotten serv, proceed to section 9.4

When the phone has gotten serv and the top indicator blinks green, lower the battery voltage to 4.2V. The top indicator should then blink red, the battery indicator in the display should be empty and the phone should warn with a beep.

- If the battery indicator isn't empty, the top indicator doesn't blink red and the phone doesn't warn with a beep, the phone needs a battery calibration.
- If the battery indicator is empty and the phone warns with a beep but the top indicator doesn't blink red, proceed to section 9.5.

9.2 Buzzer faint or silent.

Open the phone and check for liquid damages. If the buzzer is faint, check the buzzer gasket at the top of the front. If it's squeezed, mounted wrong, covering part of or entire opening, replace the front and try again. Check for bad solderings at the buzzer, H600 (class A, fig. 9.1). If the solderings are correct, replace the buzzer. Assemble the phone and try the buzzer again as in 9.1. If the fault is fixed, send the phone through the ordinary flow.

If the fault remains, disassemble the phone. Give the board power and start it up. Measure the voltage at H600 pad 3 (4.8V). If the voltage is faulty or missing, measure the voltage at both sides of R606 (4.8V, fig. 9.1).

- If the voltage is missing at one side, measure the resistance of R606 (10 ohms, class A).

  * If it's correct, replace C619 and C620 (both of them class A and in fig. 9.1).

- If the voltage is missing at both sides of R606, measure VBATT (4.8V, fig. 9.1).

  * If VBATT is incorrect, proceed to chapter 3 ("Doesn´t start"-fault).

  * If VBATT is correct, measure the resistance from VBATT to R606 (the side of it that is closest to the edge of the board, ~0 ohms).

    * If it's too high there's a foil damage and the phone is to be discarded.

Check the soldering at D600 pin 91 (fig. 9.2).

* If it's ok, measure the resistance from it to V606 pin 1 (1.0 kohms, fig. 9.1).

* If the resistance is incorrect, replace R651 (class A, fig. 9.2). If that doesn't help there's a foil damage and the phone is to be discarded.

Measure the resistance from V606 pin 1 to ground (>=2 Mohms).

- If it's lower, replace C653 (class A, fig. 9.2).
- If it's correct, replace V606 (class A). If that doesn't help, replace D600.

If the fault isn't fixed, send the phone to the next level.

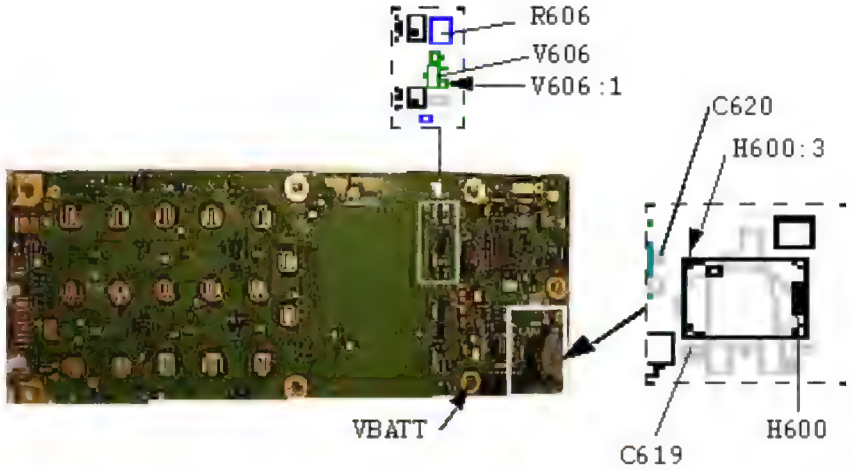

Fig. 9.1

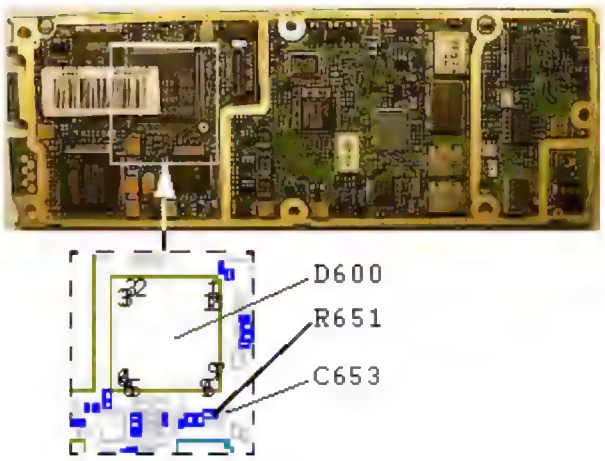

Fig. 9.2

9.3 Background illumination fault

Open the phone and check for liquid damages. Make sure all the LEDs, H651-H660 (class A, fig. 9.3), are mounted and properly soldered.

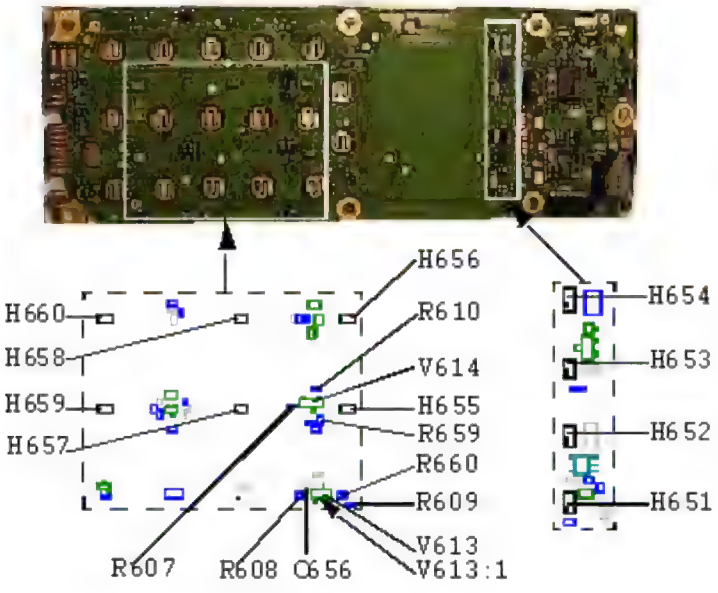

Fig. 9.3

Give the board power and start it up. If only a few of a group, H651-H654 (display illumination) or H655-H660 (keyboard illumination), aren't lit, replace them.

If H655 and H656 aren't lit, measure the resistance of R659 (33 ohms, class A, fig. 9.3).

If all of the LEDs in only one group (display illumination or keyboard illumination) aren't lit, measure the resistance of a LED in that group (anyone, they're parallel).

- If it's less than 1 Mohms, remove a LED at a time until the problem is solved.
- If it's more than 1 Mohms, measure the resistance of:
  - R610 (47 ohms, class A, fig. 9.3) for H655-H660. If it's ok, replace V614 (class A, fig. 9.3).
  - R660 (0 ohms, class A, fig. 9.3) and R609 (27 ohms, class A, fig. 9.3) for H651-H654. If they are correct, replace V613 (class A, fig. 9.3).

If none of the LEDs are lit, measure VBATT at one of the LEDs, H651-H660. Measure both sides. It should be 4.8V at the VBATT side.

- If there is no VBATT at the LEDs, check at the VBATT connector (fig 9.1).

  * If there is no VBATT there either, proceed to chapter 3 ("Doesn´t start"-fault).

  * If there is VBATT, measure the resistance from VBATT to the VBATT side of the LEDs (~0 ohms). If it's incorrect there's a foil damage and the phone is to be discarded.

- If there is VBATT voltage at the LEDs, measure the voltage at V613 pin 1 (fig 9.1, ~1.7V while LEDs are supposed to be lit).

  * If the voltage is missing, check the soldering at D600 pin 92 (fig. 9.2).

    * If it's correct, measure the resistance from D600 pin 92 to V613 pin 1 (1 kohms).

      * If it's incorrect, replace R607 (class A, fig. 9.3). If that doesn't help there's a foil damage and the phone is to be discarded.

      * If it's correct, measure the resistance from V613 pin 1 to ground (1.5 kohms).

        * If it's less, replace C656 (class A, fig. 9.3).

        * If it's more, replace R608 (class A, fig. 9.3).

If the fault remains, replace D600 (class B, fig 9.2).

9.4 Top indicator doesn't blink green.

Open the phone and check for liquid damages. Make sure the double LED, H650 (class A, fig. 9.4), is correctly soldered.

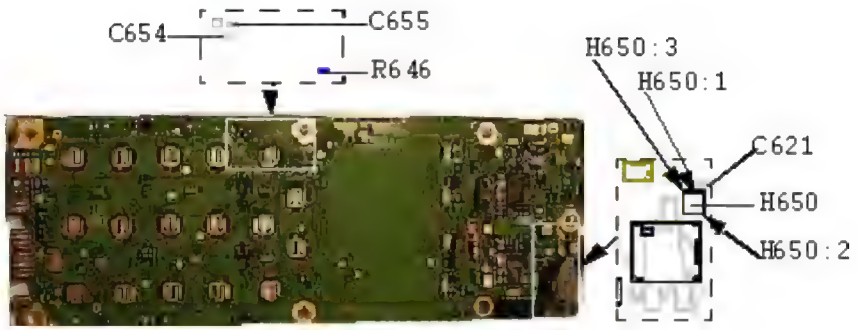

Fig. 9.4

If the solderings are correct, give the board power and start it up.

Measure the voltage at H650 pad 2 (~3.8V, fig. 9.4).

- If the voltage is correct, replace H650 (class A).
- If the voltage is missing, measure the resistance of R646 (470 ohms, class A, fig. 9.4).

  * If it's correct, measure the resistance of C621 (>10 kohms, fig. 9.4).

    * If it's less, replace these components in the mentioned order; C621, C614 and then C432 (all of them class A and in fig. 9.4 or 9.5). Note! Check the resistance if C621 after every component replaced.

    * If it's correct, measure the voltage at N411 pin 5 (~3.8V, fig. 9.5).

      * If the voltage is missing, replace N411 (class A).

- If the voltage and the resistance of R646 are correct but the voltage at H650 is still incorrect, then there's a foil damage and the phone is to be discarded.

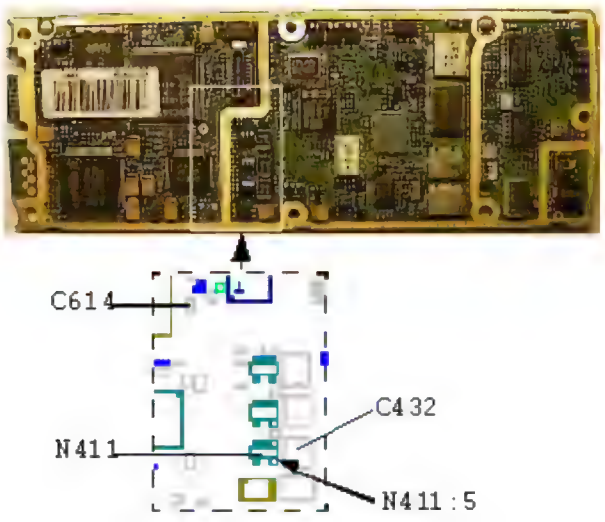

Fig. 9.5

Measure the resistance of C654 (>1 Mohms, class A, fig. 9.4).

- If it's incorrect, replace C654.

Check the soldering at D600 pin 94 (fig 9.2).

- If it's correct, measure the resistance from D600 pin 94 to H650 pad 3 (~0 ohms).

    * If it's more there's a foil damage and the phone is to be discarded.

    * If it's correct, replace D600 (class B, fig 9.2).

If the fault isn't fixed, send the phone to the next level.

9.5 The top indicator doesn't blink red.

Open the phone and check for liquid damages. Make sure the double LED, H650 (class A, fig. 9.4), is correctly soldered. If the solderings are correct, give the board power and start it up.

Measure the voltage at H650 pad 2 (~3.8V, fig. 9.4).

- If the voltage is correct, replace H650 (class A).
- If the voltage is missing, measure the resistance of R646 (470 ohms, class A, fig. 9.4).

    * If it's correct, measure the resistance of C621 (>10 kohms, fig. 9.4).

        * If it's less, replace these components in the mentioned order; C621, C614 and then C432 (all of them class A and in fig. 9.4 or 9.5). Note! Check the resistance if C621 after every component replaced.

* If it's correct, measure the voltage at N411 pin 5 (~3.8V, fig. 9.5).

* If the voltage is missing, replace N411 (class A).

- If the voltage and the resistance of R646 are correct but the voltage at H650 is still incorrect, then there's a foil damage and the phone is to be discarded.

Measure the resistance of C655 (>1 Mohms, class A, fig. 9.4).

- If it's incorrect, replace C655.

Check the soldering at D600 pin 93 (fig 9.2).

- If it's correct, measure the resistance from D600 pin 93 to H650 pad 1 (~0 ohms).

  * If it's more there's a foil damage and the phone is to be discarded.

  * If it's correct, replace D600 (class B, fig 9.2).

If the fault isn't fixed, send the phone to the next level.

10 RTC

10.1 Finding the fault.

Start the phone with a SIM-card and a fully charged battery inserted. Set the correct time. Remove the battery and reinsert it after a minute.

- If the time says 00:00, proceed to section 10.2.

Compare to the correct time.

- If the clock is speeding or is halted, proceed to section 10.3.

10.2 The time says 00:00 after removing and reinserting the battery.

Open the phone and make sure the backup capacitor, C720 (class A, fig. 10.1), is correctly soldered.

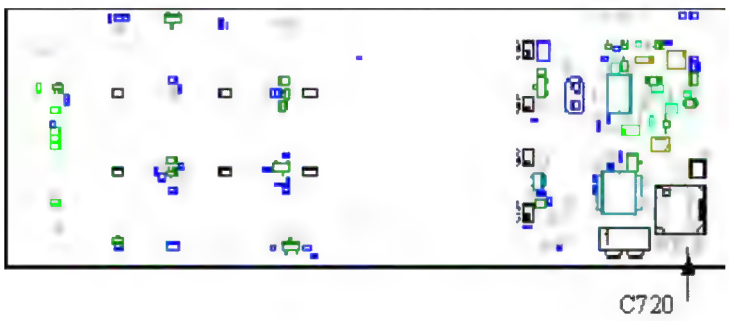

Fig. 10.1

If it is, replace it. Assemble the phone, start it up and set the correct time. Wait a few minutes for the backup capacitor to charge. Remove the battery and reinsert it after a minute. Check if the problem is fixed (the backup capacitor needs a few hours of charging to reach full capacity). Compare to the correct time.

- If the clock is speeding or is halted, proceed to section 10.3.

10.3 The clock is speeding or is halted.

Open the phone and make sure pins 117 and 118 of D600 (fig. 10.2) are correctly soldered. Also make sure the RTC crystal, B600, is correctly soldered. If it is, replace B600, C690 and C691 (all are class A and displayed in fig. 10.2).

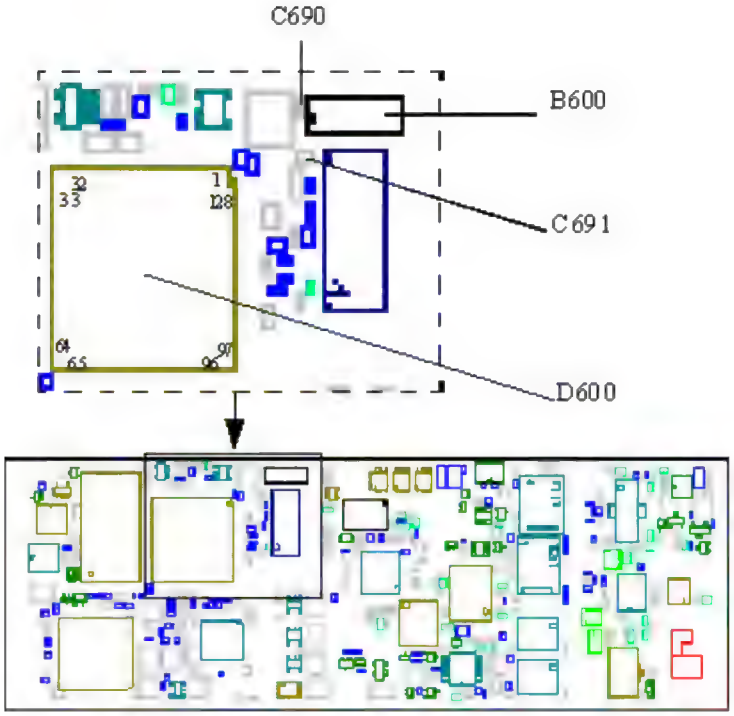

Fig. 10.2

11 IRDA.

11.1 Type of fault.

- If the range of the IRDA device is too short, proceed to section 11.2.
- If the IRDA communication isn't working, proceed to section 11.3.

11.2 Short range.

Open the phone and check for liquid damages.

Make sure there isn't dirt in the IRDA window in the front.

Replace H661 (class A, fig. 11.1).

- If the fault remains, proceed to section 11.3.

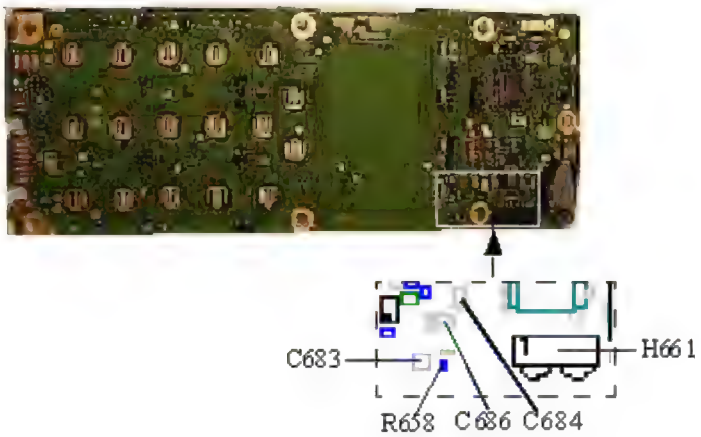

Fig. 11.1

11.3 No communication.

Replace the IRDA module (fig. 11.2) and try again.

Fig. 11.2

If that doesn't help, open the phone and check for liquid damages.

Check the solderings at D600 pins 47, 62, 64, 65 and 66 (fig. 11.3).

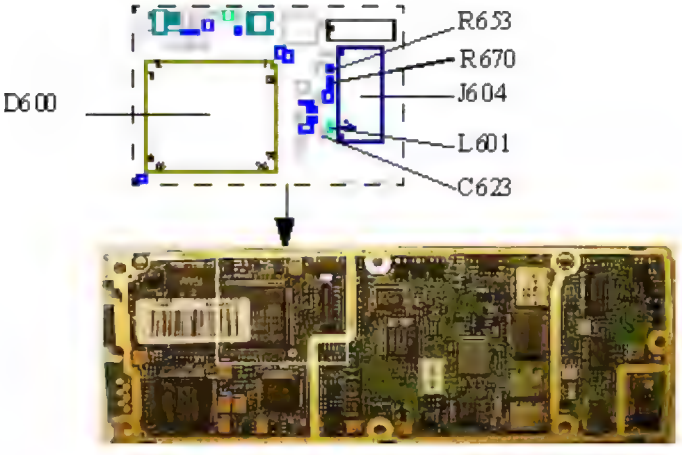

Fig. 11.3

Check the solderings at J604 (class A, fig. 11.3) and make sure the contact pins aren't damaged.

- If the contact pins and the solderings are ok, replace H661 (class A, fig. 11.1). If that doesn't help, replace C683 (class A, fig. 11.1).

If the fault remains, measure the resistances of R670 (~100 kohms, fig. 11.3), R653 (~47 ohms, fig. 11.3), L601 (~0 ohms, fig. 11.3), C623 (>1 Mohms, fig. 11.3) and R658 (2.2 kohms, fig. 11.1, all of class A).

Measure the resistance of C686 (>100 kohms, fig. 11.1).

- If it's less, replace C686 and C684 (both of class A, fig. 11.1).
- If it's correct, replace D600 (class B). If that doesn't help, send the phone to the next level.

12 Component lists

12.1 Explanation

Mounting drawing table

The Mounting drawings show the components placements (Pos) at the printed board. The Mounting drawings are not included in this document.

Component list

- **Position**:
  The components position number at the board.
- **Designation**:
  Description of the component.
- **Part No.**:
  The components part number (or reference to Revision Change table) is specifed only if the component can be replaced with Standard Electrical Repair. If the component can be replaced at higher level Certified Service Centre, the level is noted.
- **Note**:
  Functions that are affected if the component is replaced. The specified verification should be paid extra attention when testing the telephone.
- **Trouble shooting instruction**
  Means section in the Trouble shooting instruction. Not all components are mentioned in the Trouble shooting instruction.

Revision change table

If there are multiple partnumbers for a position, this table specifies which one to use for different boards or board revisions.

12.2 Mounting drawing tables

SH888, S868

Board part nr	ROA 117 3313	**R1A - R1B**	**R1C - R1F**
Mounting drawing	1078-ROA 117 3313	Rev E	Rev F

12.3 Component list SH888, S868

ROA 117 3313

			SH888, S868
Position	**Designation**	**Part No.**	**Note**
B510	QUARTZ CRYSTAL UNIT	Not available	
B600	QUARTZ CRYSTAL UNIT	RTM 501 677/01	Verify Real Time Clock function
C102	Not mounted	Not mounted	
C103	CAPACITOR	RJC 463 3022/33	
C104	CAPACITOR	See Revision Change table	
C105	CAPACITOR	Not available	
C106	CAPACITOR	Not available	
C108	CAPACITOR	RJC 463 3022/22	
C112	Not mounted	Not mounted	
C113	Not mounted	Not mounted	
C114	CAPACITOR	Not available	
C115	CAPACITOR	Not available	
C116	CAPACITOR	RJC 463 3022/22	
C117-C120	Not mounted	Not mounted	
C121	Not mounted	Not mounted	
C123	CAPACITOR	RJC 463 3022/22	
C124	Not mounted	Not mounted	
C126	CAPACITOR	RJC 463 3022/22	
C127-C131	Not mounted	Not mounted	
C202-C207	CAPACITOR	RJC 463 3022/33	
C209	CAPACITOR	RJC 463 3021/39	
C210	CAPACITOR	RJC 464 3025/1	
C211	CAPACITOR	RJC 464 3025/1	
C212	CAPACITOR	RJC 463 3021/15	
C213	CAPACITOR	RJC 463 3021/15	
C216	CAPACITOR	RJC 463 3021/15	
C217-C222	CAPACITOR	RJC 463 3022/1	
C223	Not mounted	Not mounted	
C224	CAPACITOR	RJC 463 3022/1	
C225	CAPACITOR	RJC 463 3022/1	
C228	CAPACITOR	RJC 463 3022/33	

			SH888, S868
Position	**Designation**	**Part No.**	**Note**
C229	CAPACITOR	RJC 464 3025/1	
C230	CAPACITOR	RJC 464 3025/1	
C231	Not mounted	Not mounted	
C232	CAPACITOR	RJC 464 3024/1	
C233	CAPACITOR	RJC 464 3024/1	
C234	CAPACITOR	RJC 463 3022/1	
C235-C237	CAPACITOR	RJC 464 3024/1	
C238	CAPACITOR	RJC 463 3021/39	
C242	CAPACITOR	RJC 463 3022/1	
C247	CAPACITOR	RJC 463 3022/1	
C248	CAPACITOR	RJC 463 3021/39	
C252	CAPACITOR	RJC 463 3021/22	
C253-C255	CAPACITOR	RJC 463 3022/33	
C257	CAPACITOR	RJC 463 3022/12	
C259	CAPACITOR	RJC 463 3022/33	
C260	CAPACITOR	RJC 464 3024/1	
C261	CAPACITOR	RJC 463 3022/1	
C262	CAPACITOR	RJC 463 3021/22	
C263	CAPACITOR	RJC 463 3022/1	
C280	CAPACITOR	See Revision Change table	
C282	CAPACITOR	RJC 463 3021/27	
C283	CAPACITOR	RJC 463 3022/1	
C284	CAPACITOR	RJC 463 3020/68	
C285	Not mounted	Not mounted	
C301	CAPACITOR	RJC 464 3025/1	
C302	CAPACITOR	RJC 463 3023/1	
C303	CAPACITOR	RJC 463 3022/56	
C304	CAPACITOR	RJC 464 3047/1	
C305-C308	CAPACITOR	RJC 463 3022/22	
C311	CAPACITOR	RJE 599 1107/47	
C314	CAPACITOR	RJC 464 3023/22	
C315	Not mounted	Not mounted	
C316	CAPACITOR	RJC 463 3022/1	
C317	CAPACITOR	RJC 464 3024/33	
C318	CAPACITOR	RJA 532 4055/33	
C319	CAPACITOR	RJC 463 3022/33	
C320	Not mounted	Not mounted	

			SH888, S868
Position	**Designation**	**Part No.**	**Note**
C321	CAPACITOR	RJC 463 3022/33	
C350	CAPACITOR	RJC 463 3021/22	
C351	CAPACITOR	RJC 463 3021/56	
C352	CAPACITOR	RJC 463 3022/33	
C360	CAPACITOR	RJC 463 3023/12	
C401	CAPACITOR	RJC 463 3022/47	
C402	CAPACITOR	RJC 496 2047/1	Verify charging function
C403	CAPACITOR	RJC 464 3023/82	
C404	CAPACITOR	RJC 464 3023/82	
C405	CAPACITOR	RJC 464 3047/1	
C406	CAPACITOR	RJC 464 3025/1	
C407	CAPACITOR	RJE 599 1108/22	
C408	CAPACITOR	RJE 599 1108/22	
C409	CAPACITOR	RJC 464 3024/22	
C410	CAPACITOR	RJC 464 3024/22	
C411	CAPACITOR	See Revision Change table	
C412	CAPACITOR	RJC 464 3025/1	
C413	CAPACITOR	RJE 599 1108/1	
C414	CAPACITOR	RJC 464 3025/1	
C415	CAPACITOR	RJC 463 3022/22	
C416	CAPACITOR	Advanced	
C418	CAPACITOR	RJC 463 3022/22	
C419	CAPACITOR	RJC 463 3022/22	
C421-C423	CAPACITOR	RJC 464 3025/1	
C424-C425	CAPACITOR	Advanced	
C427	CAPACITOR	RJC 464 3036/1	
C429	CAPACITOR	RJC 463 3022/22	
C431	CAPACITOR	RJE 599 1107/47	
C432	CAPACITOR	RJE 599 1108/1	
C433	CAPACITOR	RJE 599 1108/1	
C434	Not mounted	Advanced	
C435	CAPACITOR	RJC 463 3021/68	
C436	CAPACITOR	RJC 463 3022/1	
C437	Not mounted	Advanced	
C438	CAPACITOR	RJC 463 3021/68	
C439	CAPACITOR	See Revision Change table	
C440	CAPACITOR	RJC 463 3022/33	

			SH888, S868
Position	**Designation**	**Part No.**	**Note**
C441	CAPACITOR	RJC 463 3022/1	
C442	CAPACITOR	RJC 464 3024/22	
C443	CAPACITOR	RJC 464 3024/22	
C445	CAPACITOR	RJC 463 3022/22	
C446-C449	CAPACITOR	Advanced	
C451	CAPACITOR	Advanced	
C452	CAPACITOR	See Revision Change table	
C453	CAPACITOR	RJC 463 3021/12	
C454	CAPACITOR	Advanced	
C455	CAPACITOR	RJE 599 1107/47A	
C501	CAPACITOR	RJC 464 3025/1	
C504	Not mounted	Not mounted	
C505-C509	CAPACITOR	RJC 464 3024/1	
C510-C513	CAPACITOR	Not available	
C520	CAPACITOR	RJC 464 3024/1	
C521	CAPACITOR	RJC 464 3023/68	
C530-C535	CAPACITOR	RJC 464 3025/1	
C540-C541	CAPACITOR	Not available	
C542	CAPACITOR	RJC 464 3025/1	
C543	CAPACITOR	RJC 464 3024/1	
C550	CAPACITOR	RJC 463 3022/68	
C551	CAPACITOR	RJC 463 3022/33	
C552	CAPACITOR	RJC 464 3036/1	
C553	Not mounted	Not mounted	
C560	CAPACITOR	RJC 464 3047/1	
C562	CAPACITOR	RJC 464 3024/1	
C563	CAPACITOR	RJC 464 3025/1	
C564	CAPACITOR	RJC 463 3022/1	
C570	CAPACITOR	RJC 464 3047/1	
C571	CAPACITOR	RJC 464 3024/1	
C573	CAPACITOR	RJC 464 3025/1	
C574	CAPACITOR	RJC 463 3022/33	
C575	CAPACITOR	Not available	
C576	Not mounted	Not mounted	
C577	Not mounted	Not mounted	
C578	Not mounted	Not available	
C579	CAPACITOR	Not available	

			SH888, S868
Position	**Designation**	**Part No.**	**Note**
C582	CAPACITOR	RJC 464 3036/1	
C583-C587	CAPACITOR	RJC 464 3025/1	
C588	CAPACITOR	Not available	
C590	Not mounted	Not mounted	
C600	CAPACITOR	RJE 316 1061/68	
C602-C606	CAPACITOR	RJC 464 3035/68	
C608-C610	CAPACITOR	RJC 464 3035/68	
C611-C613	Not mounted	Not mounted	
C614	CAPACITOR	RJC 464 3035/68	
C615	CAPACITOR	RJC 463 3022/22	
C616	CAPACITOR	RJC 463 3022/22	
C617	Not mounted	Not mounted	
C618	Not mounted	Not mounted	
C619-C621	CAPACITOR	RJC 463 3022/22	
C623	CAPACITOR	RJC 463 3022/22	Verify IRDA function
C625	CAPACITOR	RJC 464 3036/1	
C626	CAPACITOR	RJE 316 1101/47	Verify SIM function
C627-C631	CAPACITOR	RJC 463 3022/22	
C631	CAPACITOR	RJC 463 3022/22	Verify display function
C632	CAPACITOR	RJC 464 3023/18	Verify display function
C633	CAPACITOR	RJC 464 3035/68	Verify display function
C634	CAPACITOR	RJC 464 3023/18	Verify display function
C635	Not mounted	Not mounted	
C636	CAPACITOR	RJC 464 3023/18	Verify display function
C637	CAPACITOR	RJC 463 3022/22	
C642	CAPACITOR	RJC 496 2047/1	
C650-C651	Not mounted	Not mounted	
C652	CAPACITOR	See Revision Change table	
C653-C659	CAPACITOR	RJC 463 3022/22	
C664	CAPACITOR	RJC 463 3022/22	
C665	Not mounted	Not mounted	
C666	CAPACITOR	RJC 463 3022/22	
C667-C673	Not mounted	Not mounted	
C674	CAPACITOR	RJC 464 3035/1	Verify display function
C680	CAPACITOR	RJC 464 3023/33	
C683	CAPACITOR	RJC 464 3046/22	Verify IRDA function
C684	CAPACITOR	RJC 464 3047/1	Verify IRDA function

			SH888, S868
Position	**Designation**	**Part No.**	**Note**
C686	CAPACITOR	RJC 464 3035/68	Verify IRDA function
C687-C689	CAPACITOR	RJC 463 3022/22	
C690	CAPACITOR	RJC 463 3022/15	Verify Real Time Clock function
C691	CAPACITOR	RJC 463 3022/15	Verify Real Time Clock function
C692	CAPACITOR	RJC 464 3035/68	Verify Real Time Clock function
C693	CAPACITOR	RJC 463 3022/22	Verify SIM function
C694	CAPACITOR	RJC 464 3025/1	Verify SIM function
C695	CAPACITOR	RJC 464 3036/1	Verify SIM function
C696	CAPACITOR	RJC 464 3036/1	Verify SIM function
C697	CAPACITOR	RJC 464 3047/1	
C710	CAPACITOR	RJC 464 3036/1	
C711	CAPACITOR	RJC 464 3035/68	
C712	CAPACITOR	RJC 463 3022/22	
C713	CAPACITOR	RJC 463 3022/22	
C715	CAPACITOR	RJC 463 3021/15	
C717	CAPACITOR	RJC 463 3021/15	
C718	CAPACITOR	RJC 463 3022/22	
C719	CAPACITOR	RJE 599 1167/1	Verify Real Time Clock function
C720	CAPACITOR	RJE 353 1256/3	Verify Real Time Clock function
C721	CAPACITOR	RJC 464 3035/68	Verify Real Time Clock function
C722	CAPACITOR	RJC 463 3021/68	
C723	CAPACITOR	RJC 463 3021/68	
C724	CAPACITOR	RJC 463 3022/22	
C725	Not mounted	Not mounted	
C726	Not mounted	Not mounted	
C760	CAPACITOR	RJC 464 3035/68	
C761-C763	CAPACITOR	RJC 463 3022/22	
C764	CAPACITOR	RJC 464 3025/1	
C800	CAPACITOR	RJE 316 1061/68	
C802-C807	CAPACITOR	RJC 464 3035/68	
C810	CAPACITOR	RJC 464 3035/33	Verify handsfree mic function
C811	Not mounted	Not mounted	
C812	CAPACITOR	RJC 464 3035/68	Verify handsfree mic function
C813	CAPACITOR	RJE 316 1201/15	Verify handsfree earphone function
C814	CAPACITOR	RJE 316 1101/47	Verify mic function
C815	CAPACITOR	RJC 463 3022/22	Verify mic function

			SH888, S868
Position	**Designation**	**Part No.**	**Note**
C816	CAPACITOR	RJC 463 3022/22	Verify mic function
C817	CAPACITOR	RJC 463 3022/22	Verify handsfree mic function
C818	CAPACITOR	RJC 464 3035/68	Verify mic function
C819	CAPACITOR	RJC 464 3035/68	Verify mic function
C820	CAPACITOR	RJC 463 3022/22	Verify mic function
C824	CAPACITOR	RJC 464 3025/1	Verify display function
C826	Not mounted	Not mounted	
C829	CAPACITOR	RJC 463 3022/22	Verify mic function
C830	CAPACITOR	RJC 463 3022/22	Verify mic function
C833	CAPACITOR	RJC 464 3035/68	
C835	CAPACITOR	RJE 316 1101/47	Verify handsfree mic function
C840-C842	CAPACITOR	RJC 463 3022/22	
C850	CAPACITOR	RJC 464 3035/68	Verify mic function
C851	CAPACITOR	RJC 464 3035/68	Verify mic function
C853	CAPACITOR	RJC 464 3035/68	
C900	CAPACITOR	RJE 316 1061/68	
C902	CAPACITOR	RJC 464 3035/68	
C903	CAPACITOR	RJC 464 3036/1	
C904	CAPACITOR	RJC 464 3036/1	
C905	CAPACITOR	RJC 464 3036/1	
C906	CAPACITOR	RJC 464 3035/68	
D101	MICROCIRCUIT	RYT 326 6008/4C	
D102	MICROCIRCUIT	RYT 326 6008/4C	
D103	MICROCIRCUIT	RYT 326 6008/4C	
D104	MICROCIRCUIT	RYT 326 6008/4C	
D105	MICROCIRCUIT	RYT 326 6004/32C	
D600	PROD. ADAPT. CIRCUIT	See Revision Change table	
D601	MICROCIRCUIT	RYT 326 901/1	Verify SIM function
D610	MICROCIRCUIT	RYT 118 6061/1	
D630	MICROCIRCUIT	Not available	
D900	FUNCTIONAL CIRCUIT	RYS 105 627/C	
E101	SHIELDING POT	See Revision Change table	
F600	VARISTOR	REY 203 08/1	Verify vehicle handsfree function
F601	VARISTOR	REY 203 08/1	Verify handsfree earphone function

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Position	**Designation**	**Part No.**	**Note**
F602	VARISTOR	REY 203 08/1	Verify portable handsfree function
F604	VARISTOR	REY 203 08/1	Verify flash function
F605	VARISTOR	REY 203 08/1	Verify vehicle handsfree function
F606	VARISTOR	REY 203 08/1	Verify flash function
H600	BUZZER	KLJ 107 11/2	Verify buzzer function
H650	LIGHT EMITTING DIODE	RKZ 433 613/1	Verify red/green top LED
H651-H654	LIGHT EMITTING DIODE	RKZ 433 643/1	Verify Illumination function
H655-H660	LIGHT EMITTING DIODE	RKZ 433 634/4	Verify Illumination function
H661	DIODE BRIDGE	RKZ 923 604/1	Verify IRDA function
J604	CONNECTOR	RNV 403 167/020	
J810	CONNECTOR2	SXA 120 5247/1	
L202	INDUCTOR	REG 704 9542/15	
L204	Not mounted	Not mounted	
L205	INDUCTOR	REG 704 9542/18	
L206	INDUCTOR	REG 704 9543/1	
L207	INDUCTOR	REG 704 9542/82	
L208	INDUCTOR	REG 704 9542/56	
L209	INDUCTOR	REG 704 9542/56	
L210	INDUCTOR	REG 704 0511/47	
L211	INDUCTOR	REG 704 0511/47	
L212	INDUCTOR	REG 704 9542/1	
L218	INDUCTOR	REG 704 9542/15	
L219	TRANSFORMER	REG 704 1122/22	
L223	CHOKE	REG 704 511/82	
L225	INDUCTOR	REG 704 9542/15	
L280	INDUCTOR	See Revision Change table	
L281	Not mounted	Not mounted	
L282	TRANSFORMER	REG 704 1122/39	
L299	INDUCTOR	REG 704 9542/15	
L302	INDUCTOR	REG 704 494/22	
L350	INDUCTOR	REG 704 9501/22	
L351	INDUCTOR	REG 704 9542/12	
L401	INDUCTOR	Advanced	
L402	TRANSFORMER	Advanced	

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Position	Designation	Part No.	Note
L403	TRANSFORMER	Advanced	
L404	TRANSFORMER	REG 704 1122/18	
L407	TRANSFORMER	Advanced	
L408	INDUCTOR	Advanced	
L500	TRANSFORMER	REG 706 18/1	
L505	INDUCTOR	REG 704 494/1	
L540	INDUCTOR	REG 704 494/27	
L560	TRANSFORMER	REG 706 18/1	
L571	INDUCTOR	Not available	
L572	INDUCTOR	Not available	
L601	INDUCTOR	See Revision Change table	Verify IRDA function
L701	INDUCTOR	See Revision Change table	
N201	PROD. ADAPT. CIRCUIT	Advanced	
N202	PROD. ADAPT. CIRCUIT	Advanced	
N301	MICROCIRCUIT	RYT 102 6057/1	
N302	OSCILLATOR	RTL 402 781/01	
N303	OSCILLATOR	RTL 402 782/02	
N401	AMPLIFIER	Advanced	
N410-N412	MICROCIRCUIT	RYT 113 6057/3	
N450	PROD. ADAPT. CIRCUIT	Advanced	
N500	PROD. ADAPT. CIRCUIT	Not available	
N560	OSCILLATOR	Not available	
N570	OSCILLATOR	Not available	
N605	MICROCIRCUIT	RYT 113 048/C	Verify SIM function
N700	Not mounted	Not mounted	
N701	MICROCIRCUIT	RYT 113 6095/1	
N702	MICROCIRCUIT	RYT 113 6095/1	
N703	MICROCIRCUIT	RYT 113 6040/5C	
N704	Not mounted	Not mounted	
N706	MICROCIRCUIT	RYT 113 6071/5	Verify Real Time Clock function
N800	PROD. ADAPT. CIRCUIT	Not available	
R205	RESISTOR	REP 622 453/27	
R208	RESISTOR	REP 622 453/82	

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Position	**Designation**	**Part No.**	**Note**
R211	RESISTOR	REP 622 453/27	
R212	RESISTOR	REP 622 453/27	
R213	RESISTOR	REP 622 452/47	
R216	RESISTOR	REP 622 452/47	
R224	RESISTOR	REP 622 452/47	
R229	RESISTOR	REP 622 452/33	
R231	RESISTOR	REP 622 453/33	
R232	RESISTOR	REP 622 655/1	
R233	RESISTOR	REP 622 454/39	
R234	RESISTOR	REP 622 454/27	
R235	RESISTOR	REP 622 454/39	
R236	RESISTOR	REP 622 654/33	
R270	RESISTOR	REP 622 453/27	
R301	RESISTOR	REP 622 452/1	
R302	RESISTOR	REP 622 455/22	
R303	RESISTOR	REP 622 455/22	
R304	RESISTOR	REP 622 452/1	
R305	RESISTOR	REP 622 453/1	
R306	RESISTOR	REP 622 655/1	
R312	RESISTOR	REP 622 455/22	
R317	Not mounted	Not mounted	
R318	RESISTOR	REP 622 654/1	
R360	RESISTOR	REP 622 655/1	
R401	RESISTOR	REP 622 654/22	
R402	RESISTOR	REP 622 452/1	
R403	RESISTOR	REP 622 656/1	Verify charging function
R404	RESISTOR	REP 622 001/0	
R405	RESISTOR	See Revision Change table	
R406	RESISTOR	See Revision Change table	
R407	RESISTOR	See Revision Change table	
R408	RESISTOR	REP 622 001/0	
R409	Not mounted	Not mounted	
R410	Not mounted	Not mounted	
R411	RESISTOR	REP 645 623/39	Verify charging function
R412	RESISTOR	REP 622 455/47	
R413	RESISTOR	Advanced	
R414	RESISTOR	REP 622 455/22	

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Position	**Designation**	**Part No.**	**Note**
R415	RESISTOR	REP 622 656/1	
R416	RESISTOR	REP 622 451/22	
R418	RESISTOR	REP 622 452/39	
R419	RESISTOR	REP 622 655/1	
R420	RESISTOR	REP 622 455/22	
R421	RESISTOR	REP 645 620/1	Verify charging function
R422	RESISTOR	REP 622 656/1	
R423	Not mounted	Not mounted	
R424	RESISTOR	REP 622 655/1	Verify charging function
R425	RESISTOR	REP 622 655/1	
R427	RESISTOR	REP 622 453/1	
R430	RESISTOR	REP 622 655/33	Verify charging function
R431	RESISTOR	See Revision Change table	
R500	Not mounted	Not mounted	
R501	RESISTOR	REP 622 455/18	
R510	Not mounted	Not available	
R511	RESISTOR	Not available	
R512	RESISTOR	Not available	
R513	Not mounted	Not available	
R520	Not mounted	Not mounted	
R540	RESISTOR	Not available	
R550	RESISTOR	REP 622 453/47	
R551	RESISTOR	REP 622 452/1	
R552	RESISTOR	REP 622 453/68	
R560	RESISTOR	REP 622 654/22	
R561	RESISTOR	REP 622 453/22	
R562	RESISTOR	REP 622 452/56	
R570	RESISTOR	REP 622 654/22	
R571	THERMISTOR	REZ 401 0054/47	
R572	RESISTOR	Not available	
R573	RESISTOR	Not available	
R576	RESISTOR	REP 622 452/68	
R577	RESISTOR	REP 622 452/68	
R578	RESISTOR	REP 622 453/47	
R579	RESISTOR	REP 622 452/56	
R600	RESISTOR	REP 622 452/33	Verify SIM function

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Position	**Designation**	**Part No.**	**Note**
R601	RESISTOR	REP 622 654/1	Verify portable handsfree function
R602	RESISTOR	REP 622 453/47	Verify vehicle handsfree function
R604	RESISTOR	REP 622 455/22	Verify flash function
R605	RESISTOR	REP 622 654/1	Verify vehicle handsfree function
R606	RESISTOR	REP 615 622/1	Verify buzzer function
R607	RESISTOR	REP 622 654/1	Verify Illumination function
R608	RESISTOR	REP 622 654/15	Verify Illumination function
R609	RESISTOR	REP 622 452/27	Verify Illumination function
R610	RESISTOR	REP 622 452/47	Verify Illumination function
R614	RESISTOR	REP 622 655/1	Verify display function
R615	RESISTOR	REP 622 655/1	Verify display function
R616	RESISTOR	REP 622 656/1	Verify display function
R617	RESISTOR	REP 622 455/15	Verify SIM function
R618	RESISTOR	REP 622 656/1	Verify SIM function
R619	RESISTOR	REP 622 654/22	
R620	RESISTOR	REP 622 654/22	
R622	RESISTOR	REP 622 654/1	Verify flash function
R623	Not mounted	Not mounted	
R625	RESISTOR	REP 622 453/47	Verify flash function
R627	RESISTOR	REP 622 001/0	Verify SIM function
R628	RESISTOR	REP 622 452/33	Verify SIM function
R629	RESISTOR	REP 622 656/1	
R630	RESISTOR	REP 622 001/0	
R635	RESISTOR	REP 622 455/22	Verify vehicle handsfree function
R636	RESISTOR	REP 622 455/22	Verify portable handsfree function
R639	RESISTOR	REP 622 656/1	Verify display function
R641	Not mounted	Not mounted	
R642-R645	RESISTOR	Not available	
R646	RESISTOR	REP 622 453/47	Verify red/green top LED
R650	RESISTOR	REP 622 656/1	Verify flash function
R651	RESISTOR	REP 622 654/1	Verify buzzer function
R653	RESISTOR	REP 622 452/47	Verify IRDA function
R654	INDUCTOR	See revision change table	
R658	RESISTOR	REP 622 654/22	Verify IRDA function
R659	RESISTOR	REP 622 452/33	Verify Illumination function

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Position	**Designation**	**Part No.**	**Note**
R660	RESISTOR	REP 622 001/0	Verify Illumination function
R670	RESISTOR	REP 622 656/1	Verify IRDA function
R680-R681	Not mounted	Not mounted	
R683	RESISTOR	REP 622 001/0	Verify SIM function
R684	Not mounted	Not mounted	
R685	RESISTOR	REP 622 656/1	Verify SIM function
R686	RESISTOR	REP 622 451/47	Verify SIM function
R687	RESISTOR	REP 622 455/15	Verify SIM function
R688	Not mounted	Not mounted	
R689	RESISTOR	REP 622 453/1	Verify SIM function
R690	Not mounted	Not mounted	
R692	Not mounted	Not mounted	
R693	RESISTOR	See revision change table	
R700	RESISTOR	REP 622 656/1	Verify On/Off function
R701	INDUCTOR	See revision change table	
R703	RESISTOR	REP 622 001/0	
R704	RESISTOR	REP 622 001/0	
R705	Not mounted	Not mounted	
R707	RESISTOR	REP 622 654/33	Verify On/Off function
R708	RESISTOR	REP 622 654/33	Verify On/Off function
R719	RESISTOR	REP 622 455/47	Verify Real Time Clock function
R720	RESISTOR	REP 622 456/18	Verify Real Time Clock function
R724	RESISTOR	REP 624 652/47	Verify flash function
R725	RESISTOR	REP 622 656/1	
R726	Not mounted	Not mounted	
R727	RESISTOR	REP 622 656/1	
R728	Not mounted	Not mounted	
R802	RESISTOR	See revision change table	Verify handsfree mic function
R804	RESISTOR	REP 622 656/1	Verify handsfree earphone function
R805	RESISTOR	See revision change table	Verify handsfree mic function
R806	RESISTOR	REP 622 453/1	Verify handsfree earphone function
R807	RESISTOR	REP 622 655/82	Verify display function
R808	RESISTOR	REP 622 655/33	Verify display function
R810	RESISTOR	REP 622 001/0	Verify mic function
R811	RESISTOR	REP 622 001/0	Verify mic function

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Position	**Designation**	**Part No.**	**Note**
R812	RESISTOR	REP 622 654/15	Verify mic function
R814	RESISTOR	REP 622 453/47	Verify mic function
R815	RESISTOR	REP 622 656/1	
R818	RESISTOR	REP 622 455/27	Verify mic function
R820	RESISTOR	REP 622 654/15	Verify mic function
R822	RESISTOR	REP 622 656/1	
R823	RESISTOR	REP 622 656/1	
R825	RESISTOR	REP 622 654/33	Verify handsfree mic function
R830	RESISTOR	REP 622 453/47	Verify handsfree mic function
R834	Not mounted	Not mounted	
R835	RESISTOR	REP 622 454/47	
R891	RESISTOR	REP 622 656/1	
R900	RESISTOR	REP 622 655/1	
R902	RESISTOR	REP 622 655/1	
R904	RESISTOR	REP 622 654/1	
R907	RESISTOR	REP 622 656/1	
R908	RESISTOR	REP 622 656/1	
R909	RESISTOR	REP 622 656/1	
R910	RESISTOR	REP 622 001/0	
U201	TRANSFORMER	REG 704 108/1	
U202	TRANSFORMER	REG 704 109/1	
U203	TRANSFORMER	REG 135 89/1	
U204	TRANSFORMER	REG 135 89/1	
V201	TRANSISTOR	RYN 121 6102/1	
V205-V208	DIODE	RKZ 323 650/1	
V209	TRANSISTOR	RYN 121 6102/1	
V231	DIODE	RKZ 323 650/1	
V232	TRANSISTOR	RYN 121 6069/1	
V233	TRANSISTOR	RYN 120 647/1	
V301	TRANSISTOR	RYN 120 629/2	
V302	TRANSISTOR	RYN 121 6069/1	
V303	TRANSISTOR	RYN 121 6069/1	
V304	Not mounted	Not mounted	
V305	TRANSISTOR	RYN 120 629/2	
V360	TRANSISTOR	RYN 121 6069/1	
V401	TRANSISTOR	RYN 122 654/1	Verify charging function
V402	TRANSISTOR	Advanced	

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Position	**Designation**	**Part No.**	**Note**
V403	TRANSISTOR	RYN 121 6069/1	
V405	TRANSISTOR	RYN 120 625/1	
V406	REGULATOR DIODE	RKZ 223 01/4	
V407	TRANSISTOR	RYN 121 692/1	
V408	DIODE	RKZ 323 14/1	
V409	TRANSISTOR	RYN 121 6069/1	
V411	DIODE	RKZ 323 650/1	
V412	DIODE	RKZ 323 650/2	
V414	TRANSISTOR	RYN 122 480	
V510	DIODE	Not available	
V560	TRANSISTOR	RYN 120 629/2	
V561	TRANSISTOR	RYN 901 603/1	
V562	TRANSISTOR	RYN 121 6069/1	
V570	TRANSISTOR	RYN 120 629/2	
V571	TRANSISTOR	RYN 901 603/1	
V572	TRANSISTOR	RYN 121 6069/1	
V580	Not mounted	Not mounted	
V605	DIODE	RKZ 123 647/1	Verify buzzer function
V606	TRANSISTOR	RYN 121 1621/1	Verify buzzer function
V607	TRANSISTOR	RYN 121 6069/1	
V608	DIODE	RKZ 123 646/1	
V611	DIODE	RKZ 123 646/1	
V613	TRANSISTOR	RYN 121 6086/1	Verify Illumination function
V614	TRANSISTOR	RYN 121 6086/1	
V618	DIODE	RKZ 323 673/1	Verify SIM function
V619	TRANSISTOR	RYN 121 6069/1	Verify SIM function
V620	TRANSISTOR	RYN 120 647/1	Verify SIM function
V621	DIODE	RKZ 323 680/1	Verify SIM function
V622	TRANSISTOR	RYN 123 665/1	Verify SIM function
V701	TRANSISTOR	RYN 121 6069/1	Verify On/Off function
V702	DIODE	RKZ 123 647/1	Verify On/Off function
V703	TRANSISTOR	RYN 121 1621/1	
V704	TRANSISTOR	RYN 120 647/1	Verify On/Off function
V711	DIODE	RKZ 123 647/1	Verify Real Time Clock function
V805	DIODE	RKZ 123 646/2	Verify mic function

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Position	**Designation**	**Part No.**	**Note**
X101	CONTACT HOUS-ING	SXA 120 981/2	
Z201	SAW-FILTER	RTN 201 782/01	
Z202	FILTER	RTN 202 793/02	
Z203	FILTER	RTN 202 799/01	
Z204	FILTER	RTN 202 789/01	
Z205	FILTER	RTN 202 843/01	
Z250	FILTER	RTN 201 783/01	
Z500	FILTER	RTN 202 784/01	

12.4 Revision change table for ROA 117 3313

		ROA 117 3313
Pos	**Revisions**	**Part number**
C104	Up to R1C	Not mounted
C104	R1D and higher	RJC 463 3022/33
C280	R1A	RJC 463 3021/33
C280	R1B and higher	Not mounted
C411	Up to R1B	RJC 464 2024/22
C411	R1C and higher	RJC 464 3025/1
C439	Up to R1B	RJC 463 3021/12
C439	R1C and higher	RJC 463 3021/15
C452	Up to R1B	RJC 464 3047/1
C452	R1C and higher	Not mounted
C652	R1B	REP 622 001/0
C652	Other than R1B	Not mounted
D600	Up to R1C	ROP 101 1105/C R2A
D600	R1D and higher	ROP 101 1105/C R4A
E101	R1A	SXA 120 1194/5
E101	R1B and higher	Not mounted
L280	R1A	REG 704 9501/33
L280	R1B and higher	Not mounted
L601	Up to R1B	Not mounted
L601	R1C and higher	REG 724 9342/33
L701	Up to R1B	Not mounted
L701	R1C and higher	REG 724 9342/33
R405	Up to R1E	REP 622 452/12
R405	R1F and higher	REP 622 453/1
R406	Up to R1E	REP 622 453/39
R406	R1F and higher	REP 622 453/1
R407	Up to R1E	REP 622 453/39
R407	R1F and higher	REP 622 453/1
R431	Up to R1D	REP 622 455/15
R431	R1E and higher	REP 622 455/22
R654	Up to R1B	REG 724 9342/33
R654	R1C and higher	Not mounted
R693	Up to R1B	Not mounted
R693	R1C and higher	REP 622 001/0

		ROA 117 3313
Pos	**Revisions**	**Part number**
R701	Up to R1B	REG 724 9342/33
R701	R1C and higher	Not mounted
R802	Up to R1A	REP 622 655/1
R802	R1B and higher	REP 622 654/39
R805	Up to R1A	REP 622 654/56
R805	R1B and higher	REP 622 655/15